THE IRON AGE

New York, August 26, 1915

ESTABLISHED 1855 VOL. 96 : No. 9

toreroom Organization and Management

Continuous Inventory—Mnemonic Symbolizing—Notes on Methods to Be Followed in Planning, Equipping and Caring for Stores

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Is your plant actually getting the materials it nts? What kind of inventory do you actually intain? Are your storerooms of the right size properly arranged; what are the lighting argements? How is your material actually obed? Of course, it is known that the purchasing nt buys it, but o really handles inspects it, ghs it, and passon it? Where how is your terial stored? at are the real ails of the issu- of material; authorizes is- s; what is the de in such au- rization; where s the material n go and what ount is kept of What are the ilities for han- g the material, uring periodical nover, avoiding te and so on? these are de- s of one of the mary services plant must e, and none is small as not to worthy of no- and study.

The storeroom n scientifically anized and man- d becomes one the most valu- e from a profit- king standpoint, without the per organization and management it may derate into one of the most useless. Like every er department of a business, the organization depend largely upon the nature of the business. Raw material purchased outside and which has to have work done on it in the shop is usually designated as "stores," and the records dealing with this class of material are called "stores records." Parts which have all the work done on them necessary to make them ready for assembling into machines or into assembly groups of machines are usually designated as "finished parts," though sometimes designated as "stock." The term stock is generally used to designate finished product ready for shipment. Perhaps the most definite way of designating all materials is as shown in Hugo Diemer's book, entitled "Factory Organization and Administration," covering stores, purchased finished parts, manufactured finished parts, finished product and supplies.

View in the Storeroom of the Yale & Towne Mfg. Company Showing Steel Equipment and Shelf Numbering System

THE STOREKEEPER

The storekeeper should have full authority in the storeroom. He must render receipts to the accounting department for the entire intake and output of all material and supplies. He should be solely responsible for the maintenance of a perpetual stores inventory system, and for keeping it posted. A storekeeper must, above all things, be exacting. He should be familiar with the materials and know their uses, but it is not necessary that he should be a skilled mechanic. On the other hand, he should not be simply a bookkeeper, or he may be unable to suggest uses for certain material, and,

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as a result, a lot of dead stock will accumulate, much of which might be employed for some purpose if brought to the attention of the proper persons.

Aside from the storeroom proper, the storekeeper should have charge of all material which is stored outside. Lumber, fuel and heavy castings are examples of material which comes under this head, and his records should include all of this material.

LOCATING AND EQUIPPING A STOREROOM

Two points need to be borne in mind in the locating of a storeroom and the storage facilities; namely, convenience in serving the shop and accessibility in receiving or shipping.

It is well, when possible, to consolidate all materials in one place, housing them in a special building, as this concentrates the keeping force. This is particularly desirable in case any of the material is of an inflammable or explosive nature. Savings in insurance can very often be effected and several other advantages gained by storing paints, varnish, glue, etc., in a fireproof building isolated from the main factory building.

To obtain the best location in relation to the other parts of the building, the elevators, aisles and runaways should be given careful consideration, and as far as possible the movement of material should be in direct lines as determined by the general routing of the product through the plant. A careful study of this one point alone will very often reduce expenses considerably. The location as regards the different departments should be determined by the kind and the quantity of material that one department may use compared with the requirements of some other department. If one department uses an amount much larger than another, the location should be as near as possible to the department using the greater quantity.

The physical arrangement should be such that all material can be easily received and distributed when required. It should also have the proper facilities for preserving the condition of the material and it should also be kept safe from disturbance by outside parties.

A space should be laid out near the entrance of the storeroom for incoming material and there should also be a space in which outgoing material may be temporarily placed. The provision of these two spaces will facilitate the work and allow the material called for by requisitions to be got ready in advance of the time that it is actually required.

In laying out the space required for any particular material, the needs of the different departments should be studied, and standards of maximum and minimum quantities established. From these figures of maxima and minima, the necessary space may be readily established. The storeroom should then be arranged, according to the kind of classification used, so that all of one kind will be together, and those of similar kinds next to one another.

As to artificial light, there is but one kind to be considered, and that is electric light. A factory manager in Massachusetts saw the value of subdivided circuits and easy control in the storeroom, and installed tungsten lamps in the aisles between the tiers of shelves, with a pair of switches on the end panel of every rack. By this simple method the cost of lighting was greatly reduced without the slightest delay in "working" the aisles.

Standard size bins are the most satisfactory, with provision for subdividing and re-subdividing on the unit principle. By this arrangement a large or small bin can be had by simply slipping into the larger one or more smaller units, which allows the material to occupy only the space actually required. If more space is required for a particular material, it can readily be obtained by simply removing the unit subdivision.

The storage capacity will depend greatly on what system of storing is to be used. The double-bin system of storing supplies will require a different provision than the ordinary system. Steel racks will require less space than wooden ones.

The question of the size and weight of the material, and the frequency with which it will be needed, should be the first consideration. Extremely heavy articles should not be stored on the floor, but should be raised in about the height of a truck, which will save labor in loading and unloading. Material which is constantly called for should be kept on shelves within easy reach. The top shelves and inaccessible corners should be reserved for the articles which are seldom called for.

PERPETUAL INVENTORIES

For maintaining a perpetual inventory, whereby a certain number of items are taken every day, the stock record clerk each morning fills out a stock report containing a list of items to be counted that day, as no stock records are of any value unless correct. Constant verification is the only way to establish their reliability. The most economical time, obviously, to check up the balances with a physical count is when it reaches a minimum. But it is a good plan systematically to check up a certain number of records each day. In this way the taking of a physical inventory is distributed throughout the year and there is no necessity for the costly and laborious annual or semi-annual inventory period. The result of this method will be that no extra effort will be required, and the work can be done by the storeroom staff, who are thoroughly familiar with the different materials handled almost daily in filling orders.

There is no real reason why an actual inventory should be required at any one time. If the storekeeper has a check from time to time of the actual stock on hand to compare with his stock records, it is just as practical as though all his information was supplied to him at one time. The plan has many advantages in that it does not interfere with the routine filling of orders.

Perpetual inventories require perpetual attention. The difficulties in handling them have been largely due to lack of attention on the part of employees. There are some very simple rules that should be noted: 1. No material should be permitted to leave the storeroom without a requisition, signed on behalf of the department where it is to be used. 2. All requisitions must be checked up each night before closing, and for that purpose an hour should be established in the afternoon, after which all requisitions of the day should be held over and filled the first thing in the morning. 3. Low-limit marks should be established by which the storekeeper can be protected, and the purchasing agent can be warned of the possible exhaustion of the supply. 4. A large low-limit mark should be placed on each kind of raw material so that the purchasing agent may have sufficient time to get new estimates before ordering a new stock of material. 5. Perpetual inventory records should be treated as cash is treated. Cash is verified often, or should be, so the inventory should have regular periods for verification.

MNEMONIC SYMBOLIZING OF MATERIAL

The object of a symbol system in the classification of material is to furnish a shorthand method of designation. The symbols should contain sug-

stions and aids to remembering the names of the rticles so as to make it as easy as possible for a rson knowing nothing about the system to locate e material in the classification as quickly as posble, after spending a few minutes in receiving exanation or studying the primal elements of such mbolization. If the classifications are such that ey contain no suggestion of the material classified, would be dependent entirely upon the memorizing the classification by the person using it, which ould be a difficult and unnecessary task.

It is best when considering the installation of ch a system to map out in advance all the general assifications that will be required to insure a iform system.

There are three points that should always be nsidered when working out a symbol system for aterial: 1. The classification should be as far as ssible an aid to memory, by representing the itial, secondary, or prominent letter of the article presented. 2. It should be an aid to enable conient location of material in the storeroom by der of symbols. 3. The classification should be ch as to enable perpetual inventories in the conolling accounts to be kept.

The letters used to denote any particular article division in the classification should primarily be e initial letter of the name of such article or divion, so that in reading the symbol the thought st goes to the letter shown as the initial of the quired word. In cases where the initial letter has eady been used for another article or division, e secondary letter should be used. This secondy letter should be the letter which, aside from the itial letter, has the most prominent sound and nsequently would be second most prominent in e thought of the person reading the symbol. If e initial and secondary letters have both been used eady for other items, the next most prominent ters should be taken. If it is found impossible to e a letter which would indicate the word itself, is necessary to leave the interpretation to the emory.

The first letter used for all material symbols is meaning stores, and this letter as the initial ter of a symbol should be omitted from all other assifications so that any symbol beginning with will indicate that it relates to stores. The second ter should be, as explained, the initial letter of e name for the particular work or article that e material is used for.

The third letter should signify the nature of e material. The fourth letter of the classificaon is the general subdivision of the three letter mbol; for example, STCB would mean Brass Castgs for Transformers in Stores. The fifth letter the symbol should be the particular kind of ticle in the subdivision shown by the fourth ter. For example, SVBBH may mean Hexagonal ass Bars for Various Purposes in Stores.

Except in very rare cases where all other letters e exhausted, the letters I, J, O, Q and U should t be used, for the reason that I, O and Q might mistaken for figures, and J and U might be misken for each other or for V.

After the last letter needed should be given the e of the article. In giving size, absolute unirmity should be followed as to dimensions indited by the relative position of the figures. When ree figures are used in giving dimensions, they ould be given in the order of thickness, breadth d length. When one dimension only is given, it ould indicate thickness or diameter. If two figs are given, the thickness should be given first d the breadth last. In the case of cylindrical ticles, the first figure should be the diameter, and the last figure the length, and with tubing the first figure will be the outside diameter, the second the gage or inside diameter and the third the length. Whether this method of designating dimensions is used or the opposite, does not matter, as there are good points in favor of both, but it is most essential that some one method be adopted for general use.

It is better, except in possibly very rare instances, to make the general classification by the shape of the material; for example, under SVB, meaning Bars for Various Purposes in Stores, all bars should be given in this group, no matter what the material, whether hollow bars, such as pipe and tubing, or iron bars. It is most convenient to store all these articles in one section of the storeroom, in racks built for bars, which makes it easier to locate the material by the symbol when all such material is stored in one place. The storage is properly sectioned off according to subdivisions of the general class. Sometimes this method is not practical. Under the subdivision SVA, for abrasives used for various purposes in stores, should be included the various forms of abrasives from discs and wheels, lump and powdered material to sheets, because these are used for the same general purpose of grinding, polishing or buffing, and it is most convenient to have them all together in one section of the storeroom. Thus it will be seen that the best method of general classification is according to the nature or shape of the material.

STOCK RECORD SYSTEMS

A practical test is always advisable before decision is made upon a stock record system for any business. The record may be either in ledger or card form. There are good points in favor of each, but a list of items which ought to be a part of every stock record, are: Name of article, description, part number, aisle number, bin number, unit of stock, date of receipt of material, name of concern from whom purchased, cost per unit, amount received, amount drawn from stock, order number on which withdrawal is made. So far as an actual record of the stock received is concerned and the balance on hand, the above will suffice, but the real value of a record of this kind lies in the possibility of being able automatically to keep at the proper level, which can be done by the addition of a few more items—normal stock, minimum stock, maximum stock, amount ordered, balance due. The stock record clerk is then responsible for the ordering of stock at the proper time.

All items posted to stock records, both receipts and disbursements, should be taken from forms made out by responsible employees and checked; otherwise they will not reflect the true status of the stock on hand and in case of discrepancies between the records and actual stock on hand, they cannot be accurately corrected.

All material, whether checked and counted in the receiving department or not, eventually has to be handled by the storeroom receiving clerk. In the first place, the storeroom should contain a section devoted exclusively to receiving. All material delivered to the storeroom receiving clerk should be counted, weighed, gaged or measured by him and the date noted on the receiving report, together with a proper description of the material. This verifying should be done, where practicable, the same day the material is received, and in no case should it be delayed to such an extent that the non-receipt of the receiving report by the purchasing department will cause the loss of discount on bills.

The most efficient plan of delivering material

is accomplished by having all requisitions for material or manufactured parts delivered a day in advance of the time required. The storekeeper can then arrange to have orders filled and telephone the foreman to send a boy, instead of having a dozen boys waiting at one time at a storeroom delivering window to have their orders filled.

Whenever any material is not used on the job for which it was originally intended, or is diverted to another department, your system should provide means by which the storekeeper receives a record of the fact, in order that no job may be charged with more material than has actually entered into it. Waste can generally be sold and will bring in a small amount to offset the loss.

A Recent Heavy Disk Grinding Machine

The Gardner Machine Company, Beloit, Wis., has developed a heavy disk grinding machine. The advantages claimed for this new machine, aside from its unusual weight, 5000 lb., and rigidity, are the broadening of the possibilities of the disk wheel and the handling of a number of operations heretofore not suited to this class of machine. Each machine is equipped with a dust exhauster, water cooling system and cast-iron hood for the grinding wheel.

The table column is 5 in. in diameter and when raised or lowered works within the counterweight directly over the center of the rockershaft. Two locking screws passing through the left side of the counterweight are relied upon to hold the table in any desired position, while a graduated clamp collar located on the column just above the counterweight is used to regulate the setting of the table at an angle with the wheel. The finished top of the table measures 10 in. in width and 18 in. in length and there are three ½-in. T-slots cut in the surface. A depressed channel with the bottom cast on a slope to drain the water into the basin below surrounds the table.

The table can be rocked back and forth across the grinding wheel on a rockershaft which is 4 in. in diameter. This shaft and the counterweight are a single casting. Bearings are provided for the rockershaft at each end, this style of construction, it is pointed out, resulting in an increased stiffness and rigidity. A heavy clamp outside of the left bearing of the rockershaft is relied upon to resist the tendency of the shaft to move to the right in its bearings when work being ground is forced against the grinding wheel. A collar to the right of this bearing tends to prevent the shaft from working to the left while a projection on the under side of the collar has a curved slot passing around a stop screw. By adjusting this collar on the shaft and locking it in position the limits of the rocking motion of the table can be regulated.

A New Disk Grinding Machine Weighing 5000 Lb. Equipped with Mechanism for Rocking the Table Across the Wheel Face. The Chain and Belt Drives for the Water Pump and Dust Exhauster Can Be Seen at the Left End of the Machine

Lever, screw or spring feed is provided to move the table toward the wheel. The screw feed is controlled by the handwheel mounted at the end of the table. When the lever feed is desired the wheel is disengaged by removing a taper pin extending through its hub and the travel is obtained through a pinion on the inner end of the lever shaft working in a rack attached to the under side of the table top. By lifting on the lever, a leverage of 56 to 5 is available. The screw feed is secured by replacing the taper pin and turning the handwheel to the right. A spring pressure of from 1 to 300 lb. can be secured by turning the screw handwheel when the latter is disengaged and when this feed is being used the hand feed lever is employed to give any additional pressure wanted and to lock the table away from the grinding wheel. A micrometer stop screw governs the forward travel of the table irrespective of the feed that is being used. A handle projecting from the under side of the table directly in front of the grinding wheel assists in securing the rocking motion of the table.

The machine is equipped with either a steel disk wheel 30 in. in diameter and 1¼ in. thick or a 20-in. ring wheel chuck. The former is used for dry grinding and the latter for wet. The cast-iron hood covers practically all of the face of the wheel. There are two openings in the bottom of the hood, one for water and the other for dust, and when one is in use the other is closed by a hinged cover. When water is employed it falls into the main basin from which it overflows into the removable reservoir at the rear of the machine. A gear type of pump, which is driven from the machine spindle by chain and sprockets, pumps the water through the machine base and out on the work at the point of grinding contact through an adjustable nozzle. The dust exhauster is contained within the machine base and is driven by a belt, a connection being made to the bottom of the hood to receive the dust while it is discharged at the back of the machine near the floor. The belt drive for the exhauster and the chain drive for the water pump are inclosed by a cast-iron guard, having a hinged door at the left end of the machine as may be seen in the accompanying engraving. Cast-iron sections are provided for the front of the hood and one or more of these can be removed or inserted to adjust just the opening for different sizes of work.

An interesting test of the possibilities of metal removal was recently made by the builder. The bottoms of electric sad irons having an area of about 21 sq. in. to be surfaced were ground at the rate of six per minute on this machine, while on one of the standard machines having the same size wheel the rate of output was but two in the same time. The amount of material removed per minute by the two machines was 20 and 4½ oz. respectively.

The Minnesota ranges are still producing more iron ore than is produced in the rest of the States together, having furnished 52.96 per cent of the total for the United States in 1914, as compared with 62.37 per cent in 1913. The Lake Superior district, comprising all the mines in Minnesota and Michigan and those in northern Wisconsin, mined 33,540,403 tons in 1914, or 80.94 per cent of the total production.

A 53-In. Boring and Turning Mill

The Niles-Bement-Pond Company, 111 Broadway, New York City, has recently placed on the market a 53-in. boring and turning mill. The features emphasized are centralized control, a self-contained construction and the provision of rapid power traverse and hand adjustment for the saddles and the bars.

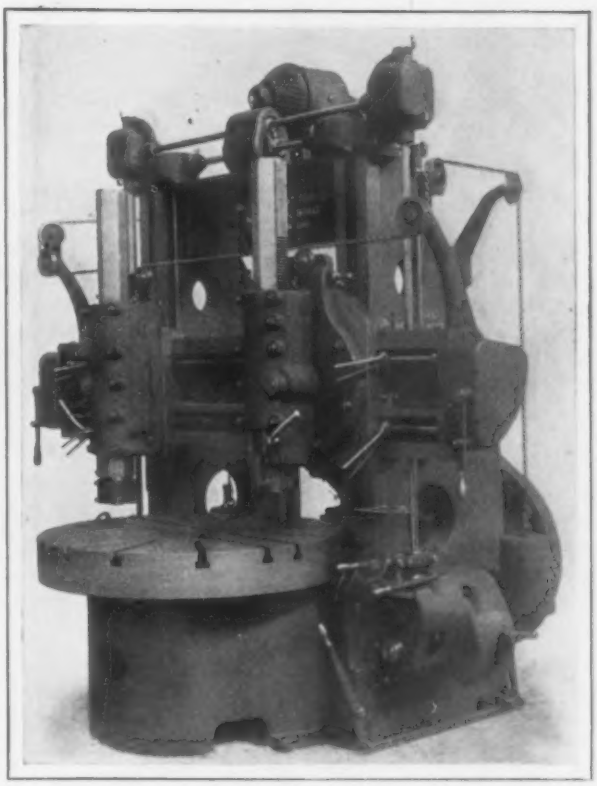
The housings are of broad-face box-girder construction with double webs and no openings in the front face. The cross-rail elevating screws are located between the housings which are fastened to the bed by bolts and are tied together at the top by a heavy brace. The cross-rail is of the three-track type with a narrow guide at the bottom, the saddle traversing screw being located between the guiding surfaces. The construction of the cross-rail is the same as that of the housing, its depth being relied upon to resist the thrust due to heavy cutting. Power adjustment is furnished for the cross-rail which can be clamped to the housings easily, if desired.

The saddles have wide bearings on the cross-rail and taper gibs to take up wear. Bolts are provided for clamping the saddle when the bar is feeding. The swiveling of the saddles is controlled by an arc worm at the top, the amount being indicated by a set of graduations. The boring bars are octagonal steel forgings, scraped to a bearing on four sides which is relied upon to enable wear to be taken up in all directions. Continuous caps are provided for the bars and a binder bolt in the bottom of the cap provides for locking the bar when the saddle is feeding. Rapid power traverse is provided in either direction for the saddles and bars and the hand adjustment is secured by automatic releasing ratchets located at the sides of the saddles. There are eight feeds which are positive, continuous and reversible. They are independent, both in amount and direction, for down, cross and angular feeding of each head. The tool holders are steel forgings with provision for clamping tools for boring, turning and facing operations. The shanks are straight and the holders are readily removable when it is desired to insert special boring bars.

While the counterweights for each bar are attached to the same chain, it is pointed out that they act independently and will not pull the swings over nor interfere with the movement of the saddles. With a view to preventing interference from overhead cranes when placing work on the table or removing it, the counterweight chain is placed at the rear of the bars. To guard against accidents in case the heads or bars meet with an obstruction when feeding or fast traversing, safety friction clutches are located on the vertical spline shafts.

The table is deep and reinforced by ribbing. A large-diameter annular bearing running in an oil bath supports the table which is driven by a wide-face coarse pitch bevel gear. Four pairs of parallel and eight radial T-slots are cut in the surface of the table. The table spindle, which is long and of large diameter, has two bearings which are relied upon to keep it in alignment. The upper one is bored out of the solid bed and is fitted with an adjustable taper bush to take up wear while the lower bearing has a bronze bushing. An adjustable threaded collar is located on the end of the spindle to guard against lifting.

All the feed changes and their reversal, rapid power traverse or hand adjustment of saddles and bars, cross-rail adjustment and table control are within easy reach from the operator's position. One lever engages or disengages the fine and coarse feeds and operates the fast power traverse in either direction. The machine is self-contained, no part extending below the floor line.



A 53-In. Motor-Driven Boring and Turning Mill with Centralized Control

The mill is driven by an adjustable-speed motor, having a range of 4 to 1, which is mounted on a drive plate located between the housings at the back. A double chain of clutch gears gives two mechanical speed changes and these in conjunction with the sixteen or more speeds furnished by the controller, give a minimum number of table speeds of thirty-two. Push-button control is provided for the motor as well as a dynamic brake for stopping the table. If desired, the machine can be driven by a belt through a single pulley or a constant-speed alternating-current motor. In either of these cases the power is transmitted through a speed box and back gear located at the rear of the mill to give twelve speed changes. The speed box is fitted with a hand-operated friction clutch for starting and stopping the table and the lever controlling this also controls the dynamic brake for the table. A separate motor located on the top brace of the mill provides for the elevation of the cross-rail and the rapid power traverse to the bars and saddles. The belt-driven machines are built on the convertible plan and, if desired, can be changed to motor drive.

A New Aluminum Alloy

A non-sweating and non-corrosive aluminum alloy is the subject of a patent (U. S. 1,146,185—July 13, 1915) granted to William A. McAdams of Bay Shore, N. Y. Consisting of aluminum, silver, copper and cadmium, it is claimed to be peculiarly adapted to casting purposes. The metals are combined in the proportion of eighty-two parts aluminum by weight, one part of silver, twelve parts of copper and five parts of cadmium, mixed in a special manner. By careful tests for more than a year, it is claimed that this alloy will withstand the action of spring or lake water without corrosion or stain, and that, while brass or bronze faucets and fixtures have been found to sweat under an internal pressure of 65 lb. per square inch, the new alloy has withstood 200 lb. internal pressure per square inch without such sweating. It is also much lighter than bronze or copper.

Russian Idea on Steel Specifications

The Proportional Limit as a Proper Basis for Rail Purchases—Wear Independent of Tensile Strength, Hardness Number, Elongation, Etc.

The Russian railroads have introduced into their specifications the requirement of the proportional limit, that is, the point at which deformation ceases to be proportional to the load. In explanation of this stand, A. N. Mitinsky, chief engineer Department of Tests, Russian State Railways, Petrograd, Russia, has prepared a paper for presentation at the San Francisco meeting in September of the American Institute of Mining Engineers.

The stress-strain diagrams of steel, he suggests, can be divided into two groups, of which Figs. 1 and 2 are typical. In these *AB* is the line representing proportionality between stress and strain, *P* is the proportional limit and *R* the yield point. Fig. 1 corresponds to a good steel which has been correctly treated both mechanically and thermally. This steel has the proportional limit and the yield point close together. Fig. 2 represents a steel of poor quality. The proportional limit *P* is low, and beyond this point, *P*, the stress-strain line departs but little from the proportional line *AB*, until the yield point, *R*, is reached. The steel with a diagram

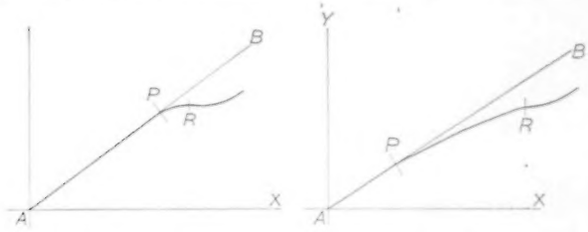


Fig. 1 Fig. 2

The Two Groups of Stress-Strain Diagrams

of this character may show good elongation and reduction of area and a high ultimate strength, but is extremely undesirable for railroad service.

From a physical point of view, the proportional limit, the author maintains, is the load at which the shearing stresses produced by a tension or compression load become sufficiently large to break down the metal. At the moment when this occurs, Hartmann's lines appear on the surface of the test specimen, which becomes dulled, and at the same time the temperature rises. After a stress of this magnitude has been applied the metal is not in the same condition as before, its internal structure having been deformed.

By gradually loading and unloading a test specimen the proportional limit can be raised, and in many cases where the stress-strain diagram is of the type shown in Fig. 2, the increase is a substantial one. The proportional limit cannot, however, be carried above the yield point, and any blow or shock, he says, will reduce the artificially raised limit. This artificial raising of the proportional limit in tension, he adds, is accompanied by a corresponding reduction in the proportional limit in compression, and inversely.

NO FAILURE BY FATIGUE WITH STRESSES BELOW PROPORTIONAL LIMIT

Mr. Mitinsky holds that by subjecting metal to repeated and alternating tension and compression it can be destroyed by so-called fatigue by loads very much below the ultimate strength. The resistance to fatigue, he maintains, depends solely on the proportional limit of the metal and is not due to some other special property. If the stress under repeated loads is less than the proportional limit no change occurs in the metal and no repetition of such a stress will cause injury, since the internal structure of the metal remains undisturbed. On the other hand, if the repeated stress exceeds the proportional limit the metal will be deformed and eventually ruptured. On the first application of the load producing such a stress, say in tension, a permanent deformation is produced, the shearing stresses do internal work, and the elastic limit in tension is increased. When the load is reversed on the following alternation the previously extended fibers are compressed and permanent deformation in compression is produced. This is the greater because the elastic limit in compression has been lowered by the previous deformation under tension. This process repeats itself, the metal being increasingly changed internally at each alternation.

In the Russian railway material inspection tests, determinations of the proportional limit are currently made and do not occupy more than 15 to 20 min. each. Marten's mirror apparatus and the Ewing and the Cambridge Scientific Company's extensometers are used. In this inspection testing it is not of importance to determine the exact value of the proportional limit, but rather to make sure that it is not less than 20 or 25 kg. per square millimeter (28,400 or 35,500 lb. per square inch), as the case may be. In case the proportional limit is found to be less than the specified value, the tires represented are rejected.

By using the proportional limit in rail specifications the Russian railways feel that it is feasible to reduce the number of tests, provided the tests have a real significance. By a brief mathematical demonstration, Mr. Mitinsky shows that the work absorbed in deformation is proportional to the square of the value of the proportional limit. Accordingly, two pieces of tire steel both having 65 kg. per square millimeter ultimate may have proportional limits of respectively 10 and 25 kg. if the one is poorly and the other properly annealed. In this case the resistances of the two tires would be in the proportion of 1 to 6, while if it be remembered that the shrinkage which holds the tire on the wheel sets up an initial stress of say 8 kg. per square millimeter the difference will be found to be still greater, say 1 to 70.

WEAR BY FLOW OF METAL NO RELATION TO HARDNESS OR ULTIMATE STRENGTH

A special committee appointed by the Russian Government to investigate the causes of rail wear and to work out means for securing satisfactory service from rails was unable to establish any definite relation between the wear obtained from the rails in service and the ultimate strength, Brinell hardness, yield point, elongation, reduction of area, chemical analysis, or deflection on drop test. As a consequence little attention is now paid in Russia to ultimate strength and chemical analysis.

If the rolling of a rail is finished at a high temperature, the value of the proportional limit will be low, the author says, so that a measurement of the proportional limit will show whether or not the rolling was properly done. Again, tires will show a low proportional limit if improperly annealed; that is, if the critical temperature of say 875 deg. C. has not been reached, or if the internal critical temperature has not been passed rapidly enough during cooling. An unannealed tire rolled at too high a temperature will also show a low value for the proportional limit.

Generally speaking, a steel with a medium amount of carbon and having a fine regular internal structure will have a high value for the proportional limit. There are, however, two cases in which a high proportional limit does not correspond to a good steel. These are: (1) overheated steel, Widmanstredt's structure; (2) high phosphorus or arsenic, or too much manganese in combination with a comparatively high percentage of carbon. In both cases the metal with a high proportional limit may be brittle, but this condition will be disclosed by a drop test.

It may therefore be concluded that if a rail or tire shows a high proportional limit and sustains satisfactorily a drop test, the steel is of as good a quality as can be desired, and no attention need be paid to the ultimate strength or Brinell hardness (these two, the author holds, being practically the same thing), nor to the elongation, reduction of area, carbon, manganese, etc.

The foregoing has dealt with wear of rails and tires by flow of metal. The wear by abrasion, he admits, has not yet been studied as closely as it deserves. Practically, all that can be said at present is that sulphur in steel tends to increase abrasion as it segregates sharply and may be present on the wearing surfaces in considerably higher quantities than in the average analysis of the ingot.

CONCLUSIONS

The author formulates the following suggestions regarding the quality of metal generally:

1. The proportional limit is the proper basis of all engineering calculations.

2. The proportional limit is independent of the yield point and of the tensile strength.

3. The proportional limit is the most important property, and should be as high as possible, especially for metals subjected to repeated loads, shocks, wear by crushing, etc.

4. The wear of metals of all kinds is independent of the ultimate strength, yield point, and Brinell number.

5. Wear by flow of metal or crushing depends only on the proportional limit. Wear by abrasion is not completely studied and it can only be said that sulphur has a deleterious influence.

6. The proportional limit can and should be measured in engineering inspection of materials.

7. The allowable working stress of any material should be fixed as a proportion of proportional limit.

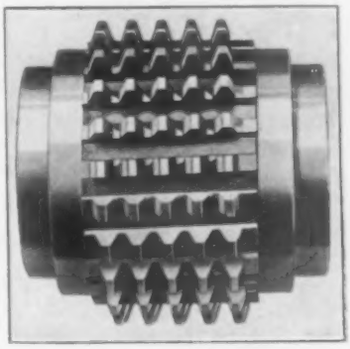
8. The resistance to fatigue is directly dependent on the proportional limit and provided this is not exceeded no number of repeated stresses will destroy the metal.

Machine Tool Builders' Meeting

The annual meeting of the National Machine Tool Builders' Association will be held at the Hotel Astor, New York, Oct. 28-29, 1915.

A Hyperboloid Hob for Generating Gears

The Lees-Bradner Company, Cleveland, Ohio, has produced a new type of generating tool or hob for gears. The hob is the result of experimental research work on the part of the maker and consists of a series of high-speed steel racks, which are ground for lead side relief, top relief and cutting edges. These racks can be renewed almost indefinitely, it is emphasized, the housing is hardened and the bore is ground to fit a plug gage. This type of hob is known as the hyperboloid hob and the cutting edges of each series of teeth simultaneously enter and depart on a theoretical line known as the generating plane.



A Hyperboloid Hob for Producing Gears Consisting of a Series of Renewable Inserted High-Speed Steel Racks

It is pointed out that in a hob of the cylindrical solid type which is fluted at right angles to the lead this helical flute presents a warped surface with one end of the flute stubbed and the other raked, as far as the generating plane is concerned, and that the row of teeth that are generating present an elliptical outline to the gear that is being worked on. It is thus apparent that when the hob is set at its working angle an elliptical outline will be presented to the work to be cut. With a view to securing a generating tool that would produce a rectangle under these conditions, it is emphasized that the tool should have a slightly spool-shaped outline known as an hyperboloid.

These hobs are being regularly furnished in a number of sizes which it is emphasized will generate gears that are theoretically and mechanically correct. It is also possible to duplicate these hobs easily.

Psychrometric Tables for Cooling Tower Work

The Wheeler Condenser & Engineering Company, Carteret, N. J., is about to publish a book entitled "Psychrometric Tables for Cooling Tower Work," a companion to its book on "Steam Tables for Condenser Work." Advance pages show that it is an unusually clear exposition of the relations among dry and wet bulb temperatures, the dew point and percentage of humidity, and a highly utilizable set of tables has been compiled for use in engineering work involving evaporation in the air, cooling air, drying air, so called, etc. Among the interesting features is a psychrometric chart prepared for the company by Prof. H. L. Parr of Columbia University, giving graphically the relations among dry bulb, wet bulb, dew point and per cent humidity, so that any two may readily be obtained knowing the other two.

The Seattle Construction & Dry Dock Company, Seattle, Wash., has received a contract for the construction of a steel steamship for the New York & Cuba Mail Steamship Company, operating the Ward Line. The vessel will be 368 ft. in length, of about 6000 gross tonnage, and will be modern in every respect as to freight-handling equipment, boilers and engines.

Magnesite is reported to have been found in considerable quantities along the shore of Lake Atlin in northwestern British Columbia. It is shown by analysis to run as high as 98 per cent in $MgCO_3$.

COKE IN GAS PRODUCERS

German Experience in Substituting It for Coal—More Steam Required—Analysis of the Gas

A paper on the use of coke in gas producers, by Dr. H. Margraf, published in *Stahl und Eisen*, indicates that there is some difficulty in Germany in getting the necessary amounts of gas-producer coal. The reasons given are that the output of the mines is not so great as in times of peace, due to their being worked by unskilled men, and the usual imports from England and Belgium have been very greatly reduced. Also much more coal is being coked than formerly, because of the need for the valuable by-products. The result is a larger supply of coke, and constant effort is urged to replace coal by coke as much as possible.

Many boiler plants have already adopted coke firing with good success, and recently experiments have been made in ordinary gas-producer practice. At a plant in Lorraine, coke has been used since the beginning of January with complete satisfaction. Unfortunately coke alone has not been tried extensively, owing to the difficulty in getting supplies. The average mixture was ½ to ¾ coke, and ½ to ¼ coal (nut coal from the Saar, 15 x 35 mm.). The gas from this mixture was used in the heating furnaces for the rolling mills.

Ordinary revolving grate producers were used, with shaft lined with firebrick and not water-cooled. No changes in the producers were necessary. The largest pieces of coke must be broken so that the size is not more than about 80 mm. This is either done by a crushing machine, or else the coke is bought already crushed at a small extra cost per ton. The ordinary fork coke cannot be directly used in gas producers as the pile must be very high, which is not possible with the limited height of shaft. The work of poking is somewhat less than when coal is used alone. The coke settles down uniformly and does not form hollow places, for it does not swell and become soft when heated like the coal. The ash appears to be somewhat heavier and more solid than that from coal, but its removal offers no difficulties.

The coke contains practically no volatile matter so that no heat is taken up for distillation. The producer therefore showed a tendency to run hot, and it was found that about 10 per cent more steam than usual had to be mixed with the air. Also the producers were found to gasify the same amounts of material as formerly.

It is evident that the gas will be different in composition from ordinary producer gas. Average results of carefully taken samples from the plant mentioned before gave:

	With Coke	With Coal
Carbon dioxide, per cent	2.0	4.1
Oxygen, per cent	0.0	0.3
Carbon monoxide, per cent	29 to 30	23.6
Hydrogen, per cent	6 to 7	13.4
Methane, per cent	0.5 to 1.0	2.6
Heat value, calories per cu. m.	1,130	1,285

The ordinary producer gas, at the first glance, appears to be the best. It must be remembered, however, that the hydrogen requires double the amount of air that the carbon monoxide needs, and that the nitrogen has to be raised to the temperature of combustion. There are at present no exact results as to the comparison of the two materials for gas-producer work, but from a theoretical standpoint the coke would appear to be the best. At the plant already mentioned only 15 to 20 per cent coke has been mixed with the coal for open-hearth work, and no difference in operation has been noticed.

As a conclusion a little is said regarding the kind of flame given by the gas. In general it is believed that the gas burns with a shorter sharp flame. This is not the case. In the heating furnaces it shows an extremely long flame, somewhat more transparent than the ordinary flame, but clearly seen. Also the tests with water tube boilers show that the flame is not short. Sharp short flames are therefore only to be feared with a great excess of air.

G. B. W.

Steel Over 2000 Years Old

At a recent meeting of the Faraday Society of England, Sir Robert A. Hadfield, the president of the Society, in speaking on the subject of "The Hardening of Metals," which was the general topic of the meeting, showed a specimen of steel which he offered as probably the first to be exhibited in modern times of an ancient piece of high carbon steel which had been hardened by quenching. The analysis was as follows:

	Per Cent
Carbon	0.700
Silica	0.040
Sulphur	0.008
Phosphorus	0.020
Manganese	0.020
Iron	99.500

In describing it Mr. Hadfield said:

It was possible to obtain a fracture of the specimen, which weighed about 8 oz., was 3 in. in length, 2½ in. in breadth, ½ in. in thickness. This showed fine crystalline but rather brittle structure. After removing the scale the Brinell ball hardness number was found to be 146. On sawing the specimen in two there was found to be a quite fair proportion of the original metal still unoxidized. I received this specimen a few months ago from the superintendent of archæology in Western India, Mr. Bhandarkar.

One of the special points is that, notwithstanding the large number of specimens of ancient iron and supposed steel I have examined during the last few years, none of them have contained sufficient carbon to be termed steel in our modern-time meaning. This specimen, as will be seen from the above analysis, contains as much as 0.70 per cent carbon, which indicates that it can be readily hardened by heating and quenching in water. In other words, this material has been in its present condition for probably more than 2000 years, and now, after being heated and quenched, hardens exactly as if it had been made only yesterday, thus showing that in this long interval and beyond surface oxidation, this specimen has undergone no secular change of structure, or alteration in the well-known capacity of an alloy of iron with carbon to become suddenly possessed of glass-scratching hardness after being heated and quenched in water or other cooling medium.

The photomicrograph of the material in the original condition shows that though variable in structure, and ranging in carbon from about 0.30 to 0.75 per cent, this is of pearlitic type, existing in both lamellar and sorbitic form. The crystallization varies from fine to coarse. In places the structure is blued, as a result probably of mechanical work. There are seams of slag in certain portions, but apart from these the material appears to be of similar type to ordinary modern carbon steel. After quenching from 850 deg. C. in water the steel readily scratches glass and under the microscope reveals the expected martensitic structure.

Mr. Bhandarkar assures me there is not the slightest doubt about the antiquity of this specimen from the bars found beneath the stone pillar of Heliodorus at Besnagar, India. It was found at the bottom of the pillar, dating back to about 125 B. C.

The Columbia Pipe Mills, Columbia, Pa., has resumed operations after an idleness of about seven years, manufacturing wrought-iron pipe.

German Steel Works Union Statement

The German Steel Works Union, at a meeting held in Düsseldorf, Germany, July 22, made the following announcement regarding business conditions:

In semi-finished steel domestic consumers are well employed in proportion to their decreased capacity. The average coverings can keep up to the levels hitherto maintained if the percentage of workmen does not make further operating reductions necessary. Export business with neutral countries is taking its usual course.

For heavy rolled material, the government railroads placed a supplementary order for 1915 account, so that the total requirements of these lines reach the average high amounts of last year. With neutral countries some business was taken and some is still under consideration. In other rolled products, such as grooved rails, domestic business is generally quiet, but with neutral countries not an insignificant volume was done. Orders for railroad rails were somewhat less in June than in May, but still went beyond the average of the January-June period.

In bars and structural material, domestic demands experienced an expansion in June over both the two months preceding, and in response to this the transportation conditions were better. In general, business is dull as a consequence of the quiet building market. Construction work and car building are notably good, in comparison and proportionately buoyant. Business with neutral countries is invariably quiet.

The next meeting is scheduled for Thursday, Sept. 23.

A recent report issued by the Allis-Chalmers Mfg. Company shows total sales billed in the June quarter of $2,816,181, compared with $2,751,119 for the preceding three months, but the net profits were $194,813 compared with $14,756 in the corresponding quarter of 1914. The unfilled orders of June 30 were $7,657,185, against $3,087,000 in 1914, and since that date many additional orders have been received. In July the company had orders on its books amounting to $7,000,000, against $2,500,000 Jan. 1, and more war orders are reported to be pending from the Bethlehem Steel Company. At present the company is working on a contract for shells, received from the Bethlehem Company, which calls for 10,000 daily to Sept. 1.

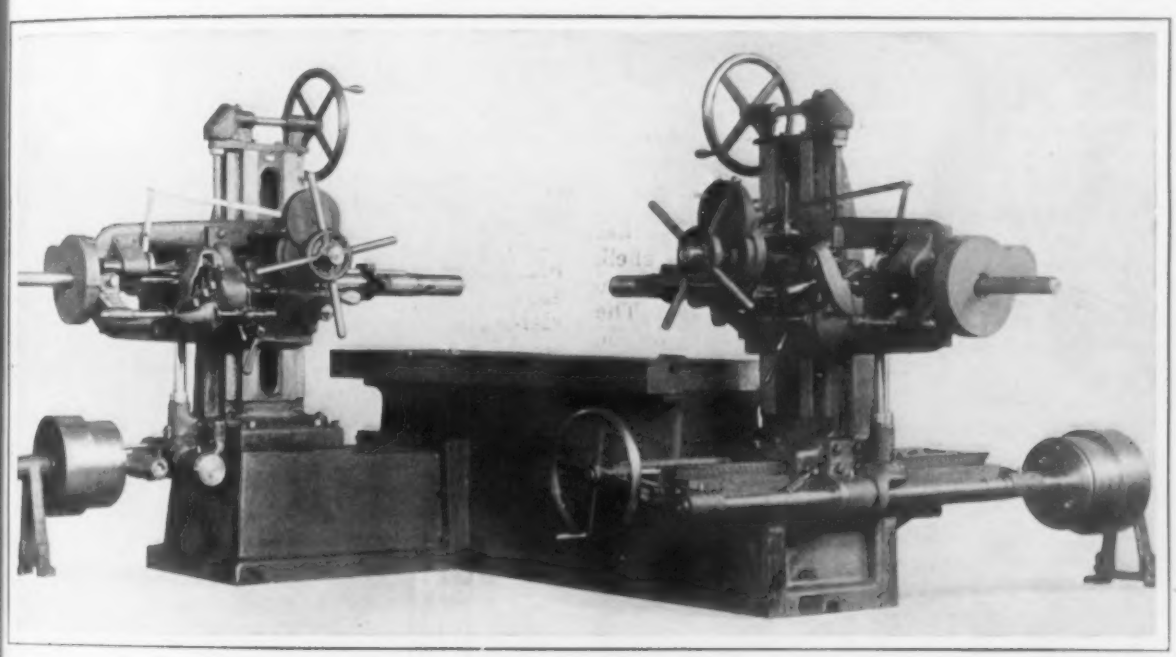
Great Britain's imports of iron ore were 23.5 per cent less in 1914 than in 1915, being 7,230,605 and 5,539,255 gross tons respectively.

Double-Head Horizontal Boring Machine

A double-head horizontal boring, drilling and tapping machine has been developed by the Rockford Drilling Machine Company, Rockford, Ill. A number of different combinations are built, one having a right and a left hand head located at right angles to each other, as will be noticed from the accompanying illustration, with the heads arranged for a lateral adjustment of 36 in. and a vertical adjustment of 18 in. In another the heads are arranged with a vertical adjustment only or with one head having both vertical and lateral adjustments while the other has a vertical adjustment only. The other two combinations are the same as those just described except that the heads are arranged at the ends of the table which measures 24 x 72 in.

The machine is designed to drive high-speed drills up to a maximum diameter of 3 in. and boring tools up to 8 in. for boring out cored holes in cast iron. There are eight rates of speed available for the spindle which is 2 1/16 in. in diameter and has a travel of 25 in.

The machine is arranged for either belt or motor drive. The belt drive can employ either a two, three or four step cone pulley or a tight and loose pulley with a gear box to provide eight different speeds. The motor drive uses either a constant-speed motor and a gear box or a direct-connected, adjustable-speed motor.



A Double-Head Belt-Driven Horizontal Boring, Drilling and Tapping Machine in Which the Heads Are Arranged to Work at Right Angles to Each Other

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Coke-Oven Gas for Town Lighting

The first use on a large scale of coke-oven gas for town lighting in England is at Middlesbrough and it is stated that the confidence of the promoters has been fully justified. Mention of the installation was made in THE IRON AGE of April 2, 1914. An aspect of the problem emphasized lately is that most of the municipal gas companies have raised the price of gas by 8c. to 12c. per 1000 cu. ft., due to the increased cost of coal, but at Middlesbrough no advance has been made.

The Thomas Iron Company, Easton, Pa., will install the Croxton slag handling system at its Nos. 1 and 3 blast furnaces at Hokendauqua, Pa. The company also plans the erection of a large capacity, up-to-date hot blast stove for the No. 3 furnace.

BANDING PROJECTILES

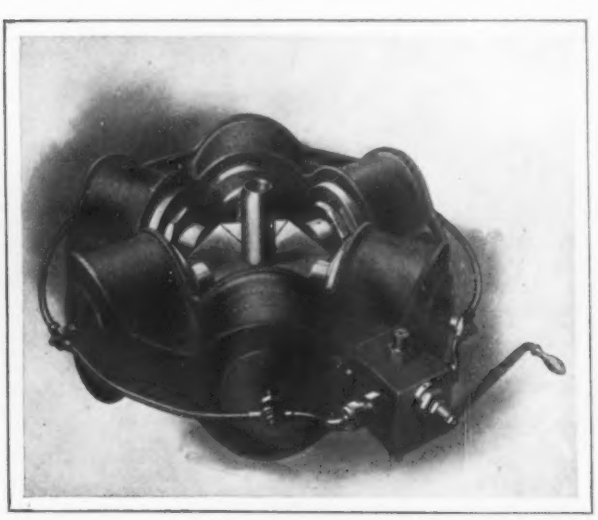
One Development in Process of Pressing Copper Rifling Bands in Place

An instance of the developments being made in equipment for manufacturing war munitions is to be had in the experience of Richard Dudgeon, New York City. In one of the accompanying illustrations is shown a hydraulic press which this manufacturer has supplied for forcing the copper rifling bands on projectiles as large as 9.2 in. in diameter, while the drawing shows a later development which involves higher pressures, and therefore smaller size parts and provides for hand operation without the need of a separate power pumping plant. The rapid transition in design is exemplified further in designs under way for still another machine, also of small size, which however has not been tested and is not yet a commercial article.

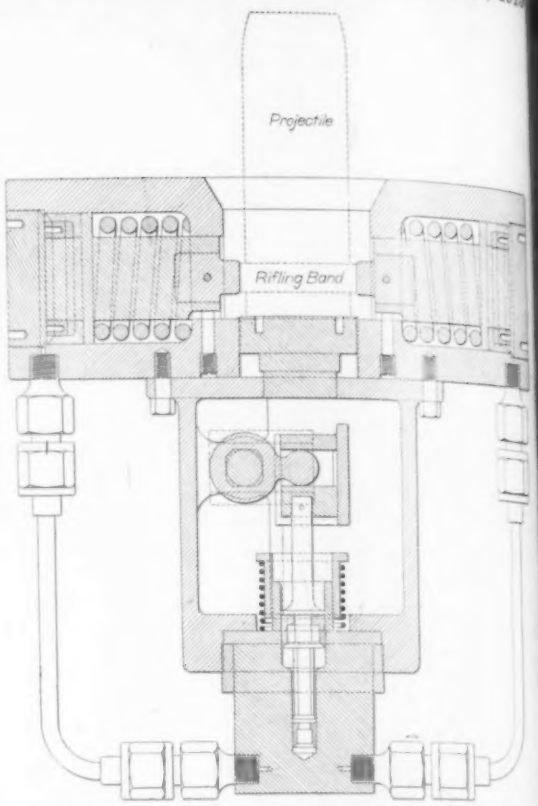
The press shown in the reproduced photograph is of heavy proportions. The frame is a single steel casting, while the cylinders are solid steel forgings, as are also the plungers, which are fitted with bronze wearing parts and bronze glands. The frame is bored at the one setting for each pair of cylinders and is turned 60 deg. successively for boring the other pairs of cylinders.

In operating the press, the shell is placed on a table adjusted to the desired height, which also holds the dies shown. The press is operated by throwing to one side the handle shown on the valve block, which is a steel forging, and throwing to the other side to reverse the movement. The rams are returned by springs surrounding the plungers and are brought against an adjustable stop so that there is only sufficient movement to insert the shell, or to turn it, say, 30 deg. after the first of the two pressing operations which ordinarily suffice. The press which takes projectiles 9.2 in. weighs 2700 lb. without stand or pump and requires about 20 sq. ft. of floor space, while a smaller press for projectiles 4 in. in diameter and smaller weighs 2500 lb. and requires about 16 sq. ft. of floor space.

The machine illustrated in the drawing employs also six compressing cylinders arranged in a circle as in the machine described, but comprehends the utilization of a pressure of 6000 lb. rather than the more common 1500 lb. and incorporates in a compact arrangement the principle of the Dudgeon hand-operated hydraulic jack. Without describing in any detail the operating scheme of the hydraulic jack, it is to be recalled that this involves two plungers on the one stem or pump rod with an arrangement of valves as shown, so that in one stroke with the larger plunger in operation, sufficient water may be forced into the cylinders to bring the dies against the copper band. Then the smaller plunger is put into action by lever control of the valve and it is found that nine or ten strokes of the hand pumping lever will develop the pressure necessary to band the projectile satisfactorily. It is claimed that one man can easily band 30 projectiles in 1 hr. with this machine.



Dudgeon Machine for Banding Projectiles



Sectional Elevation of Hand-Operated Banding Machine

Motors for Naval Aeroplanes

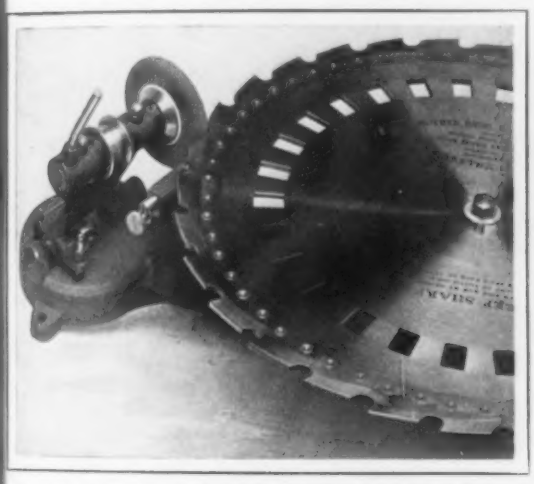
WASHINGTON, D. C., Aug. 24, 1915.—In announcing that bids will be opened at the Navy Department on Sept. 14 for the award of contracts for twenty-seven motors for naval aeroplanes, Secretary Daniels said: "It is our purpose to encourage American motor builders. So far we have been unable to get a motor in this country that is entirely satisfactory for naval aerial purposes. That is the first problem the Naval Advisory Board will be called upon to solve. Just before the war broke out we ordered three motors abroad. They were not delivered. The chances are that it will be a long time before we will be able to obtain motors in Europe. It is my belief that in time we will be able to build motors in this country equal to those constructed abroad." Bids are called for on 12 motors delivering from 100 to 120 brake hp.; 12 motors delivering from 120 to 140 brake hp.; 1 motor delivering from 140 to 160 brake hp. (11 more of the latter type to be purchased if this one proves satisfactory) and 2 motors of greater than 160 brake hp. The department's announcement said: "In these proposals provision is made for alternate bids by modified specifications, or by substitute specifications, so that any builder of motors of the power specified may submit bids without hesitation and all such bids, when accompanied by the required bond, will be given full consideration."

Wire nail manufacture in Japan has made good progress since being protected by a high tariff. The Yasuda Nail Works at Edamitsu can now turn out about 15,000 kegs a month and the Kishimoto Nail Works at Amagasaki, 7000 to 8000 kegs. Adding the output of other works the total is about 40,000 kegs per month. Imports of French nails are reported to have ceased.

Inserted-Tooth Saw Grinding Machine

The Huther Brothers Saw Mfg. Company, Rochester, N. Y., has placed a special type of grinding machine on the market. It is designed for sharpening saws having inserted cutting teeth, such as are used for cutting off bar stock and structural material.

The machine consists of a grinding wheel that can be adjusted for various tooth angles, an adjustable table on which the saw is mounted and a base connecting the two. In operation the saw is placed on the table and the latter adjusted, as is shown in the accompanying illustration, so that the grinding wheel will swing to the bottom of the tooth. The grinder head is adjusted to conform to the angle of tooth or hook of the saw and the adjustable stop is set so that it bears squarely against the back of the tooth. The stop on the grinder head is then regulated so that the wheel will grind the front of the teeth only and will not cut into the body of the saw. The grinding wheel, which is at rest, is then brought to the bottom of the tooth and the adjustable stop resting against the back of the tooth turned until the front portion of the tooth is rubbing lightly against the grinding wheel. The wheel, which is driven by a belt connection, is then started and the wheel supporting the saw brought up against the stop. After this tooth has been ground, the edge of the saw is raised to enable the tooth to pass over the stop. The process is then repeated for the next tooth



A Special Type of Grinding Machine That Has Been Developed for Sharpening Metal Cutting Saws Having Inserted Teeth

and so on until all have been sharpened. To keep the original shape on the front of the teeth it is pointed out that it is only necessary to dress the emery wheel.

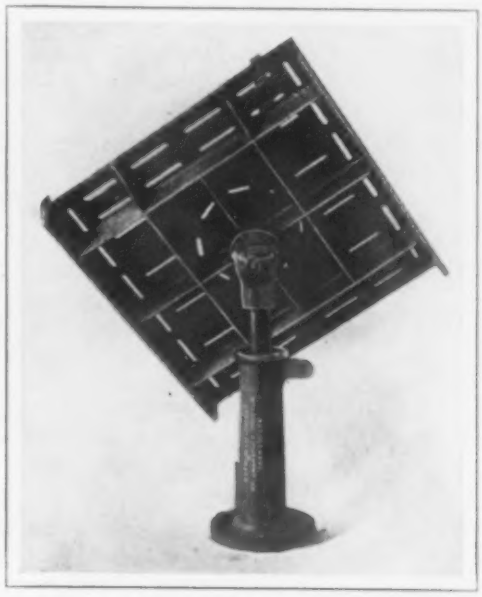
A Nickel-Tantalum Alloy

The resistance of nickel to acids is bound to be considerably increased by the addition of 5 to 10 per cent of tantalum. An alloy of nickel with 30 per cent tantalum can be boiled in aqua regia or any other acid without deterioration. The alloy is tough, easily rolled, hammered or drawn into wire. Combined with tantalum, nickel loses its magnetic quality and the alloy has the advantage over pure tantalum in that it can be heated in the open air to a high temperature without oxidizing. It is produced by mixing the two metals in powdered form, compressing them under great pressure and bringing them to a high heat in a crucible or quartz tube in a vacuum.

The Pennsylvania Steel Company has blown in its No. 4 blast furnace at Steelton, Pa. It is turning out about 260 tons of iron per day. No. 5 furnace will be completed and ready to be blown in about Sept. 1.

Universal Autogenous Welding Table

For facilitating repair welding and manufacturing operations, the Cave Welding & Mfg. Company, Springfield, Mass., has placed on the market



A Universal Table for Use in Connection with Autogenous Welding Torches for Repair and Manufacturing Work

a universal table. It is designed particularly for use where it is desirable to strap work and move it about for convenience in working without releasing the clamps. Such a situation frequently occurs in autogenous welding and the table can also be used for laying out work.

The table proper, which is made of cast iron, is supported on a telescoping steel pillar. Ratchet teeth enable the top to be raised throughout the vertical adjustment of 12 in., and it is clamped in position by a single set screw. The top has a machined surface and is reinforced by ribbing. Bolt slots and two 3¾-in. flanges are provided on two sides for vertical clamping. It is possible to revolve the top in any position and a ball joint arranged to tilt to an appreciable angle in any direction and a right angle in one direction supports the table.

The top of the table is 30 in. square and the height from the floor is the same. The shipping weight is 400 lb.

Smith & Wesson Bonus to Employees

Smith & Wesson, manufacturers of revolvers, Springfield, Mass., announce that a bonus will be given of 5 per cent of each employee's wages for the three months previous to Jan. 1, 1916, and for every three-month period of 1916. It affects some 400 employees. Those who are laid off for infringement of the rules of the establishment or who resign in any one of the three-month periods will not receive the bonus for any part of their term of employment. The average sum to be received under the plan, it is estimated, will amount to $15 a quarter.

Those who enter the employ of the firm after the three-month period previous to Jan. 1 begins will receive the bonus based upon their total wages for the period of their employment, providing their employment is continuous. Those who are absent because of illness, lack of work or other just cause will receive the bonus for the time they work. The firm promises that prices on piecework will not be changed during the period in which the agreement holds. It is understood that the agreement will hold to Oct. 1, 1916, its renewal resting solely with the firm.

Desulphurization in Cupola Practice

A Series of German Experiments to Determine the Extent to Which Sulphur May Be Removed by Various Chemicals or Operating Changes

A series of experiments, with the object of determining the behavior of sulphur in cupola smelting, has been carried out by Otto Vollenbruck, and the more important of these have been summarized in a recent issue of *Stahl und Eisen.*

ABSORPTION OF SULPHUR BY LIME

One deals with the absorption and removal of sulphur with different additions of lime in a cupola. Under otherwise uniform conditions, that is with the same cupola practice and a charge of 750 kg. of full-sized coke, 600 kg. of iron and 45 kg. of fine coke, the lime additions shown in Table 1 were employed in the different trials. The tests were taken 15 min. after the appearance of the first pig iron in the fore-hearth, and at the junction of this and the cupola. The examination of the slag and the iron gave the following results:

Table 1.—Sulphur Remaining in the Iron with Varying Lime Content of Cupola Slag

Limestone Additions in Per Cent of the Weight of Coke	Sulphur Content of the Cast Iron, Per Cent	Sulphur Content of the Slag, Per Cent	Lime Content of the Slag, Per Cent
0	0.124	.....	.....
3	0.120	0.057	10.90
6	0.118	0.057	13.04
9	0.111	0.061	14.26
12	0.087	0.062	14.74
15	0.083	0.062	16.15
18	0.084	0.062	16.40
21	0.087	0.062	18.36
24	0.084	0.078	19.15
27	0.088	0.116	23.65

The charge had at the most less than 0.05 per cent sulphur. The lowest sulphur content of the iron after the smelting was 0.08 per cent, and of this 0.03 per cent comes from the coke, an enrichment which cannot be prevented by lime conditions. The slag is enriched with sulphur up to an addition of 27 per cent lime, but the removal of sulphur from the iron ceases when the slag contains 14.74 per cent of lime, at which stage a further addition of lime is useless. It is accompanied from this on only with a removal of sulphur from the gases of the coke.

EFFECT OF LIME AND MANGANESE SILICATES

The effect of lime and manganese silicates on the sulphur content of the iron was tested by laboratory experiments. For clear working conditions a pig iron was used containing about 1 per cent sulphur (0.983). By smelting together chemically pure calcium carbonate, $CaCO_3$; manganese oxide, MnO; and silica the following compounds were obtained:

Calcium sesquisilicate, $4CaO \cdot 3SiO_2$.
Manganese sesquisilicate, $4MnO \cdot 3SiO_2$.
Calcium bisilicate, $CaO \cdot SiO_2$.
Manganese bisilicate, $MnO \cdot SiO_2$.

Results with Sesquisilicates.—The iron used contained 3.49 per cent carbon; 0.22 per cent manganese; 3.047 per cent silicon, and 0.933 per cent sulphur. The crucible charge was always 50 grams, of which 30 grams was iron and the remaining 20 grams was either one of the above, lime silicate, a manganese silicate, or a mixture of both, as shown in Tables 2 and 3. Two sets of experiments were carried out, one using only sesquisilicates and the other the bisilicates.

Table 2.—Effect of Calcium and Manganese Sesquisilicates on the Sulphur Content of Iron

Charge	Sulphur in Slag, Per Cent	Iron: Sulphur, Per Cent	Iron: Silica, Per Cent	Iron: Manganese, Per Cent
Sulphur-bearing iron		0.933	3.047	0.22
1. Ca-sesquisilicate, 20 g.; iron, 30 g...	1.268	0.061	3.348	0.22
2. Ca-sesquisilicate, 10 g.; Mn-sesquisilicate, 10 g.; iron, 30 g.	1.297	0.051	2.263	5.581
3. Mn-sesquisilicate, 20 g.; iron, 30 g...	1.276	0.054	2.530	6.140

The effect of calcium-sesquisilicate is to reduce the sulphur from 0.933 per cent to 0.061 per cent. By the substitution of manganese-sesquisilicate for the calcium compound, the sulphur content is influenced in a similar manner. The increase in the silicon in test No. 1 is perhaps due to the reduction of silica by carbon; the reduction in the silicon in tests 2 and 3 is caused by the effect of the manganese oxide content of the slag which hinders the reduction of the silica. The increased manganese content, in the case of both the calcium and manganese silicates, brings about an equally strong lowering of the sulphur.

Results with Bisilicates.—Substituting the bi- for the sesquisilicates, the absorption of sulphur was less.

Table 3.—Effect of Calcium and Manganese Bisilicates on the Sulphur Content of Iron.

Charge	Sulphur in Slag, Per Cent	Iron: Sulphur, Per Cent	Iron: Silicon, Per Cent	Iron: Manganese, Per Cent
Sulphur-bearing iron.....		0.933	3.047	0.22
4. Ca-bisilicate, 20 g; iron, 30 g.	1.016	0.277	3.400	0.22
5. Ca-bisilicate, 20 g; Mn-bisilicate, 5 g; iron, 20 g.	1.071	0.158	3.218	2.158
6. Ca-bisilicate, 10 g; Mn-bisilicate, 10 g; iron, 30 g.	.....	0.129	7.049	6.198
7. Ca-bisilicate, 5 g; Mn-bisilicate, 15 g; iron, 30 g.	1.147	0.142	2.812	3.127
8. Mn-bisilicate, 20 g; iron, 30 g.	1.286	0.135	3.116	2.947

This table shows that the absorption of sulphur in the presence of calcium and manganese bisilicate slags is less than with the sesquisilicate slags. Technically commercial value is not attained. The manganese-bisilicate shows a 50 per cent stronger desulphurizing power than the calcium-bisilicate even by the substitution of four parts of calcium-bisilicate by managanese-bisilicate. The silicon content of the iron changes but little. Test No. 6 is not to be considered because the slag was coked by overheating. Successful smelting must be maintained at a definite temperature, between 1450 and 1500 deg.

With a mixture of 20 g. of calcium-trisilicate, $2CaO.3SiO_2$ and 30 g. of iron, the sulphur content was reduced from 0.933 per cent to 0.547 per cent.

The quantity of slag in any of these experiments was 66.6 per cent of the iron. With a mixture, for example, of 1 g. of calcium-bisilicate and 30 g. of high sulphur iron, the slag produced was only 3.3 per cent, a condition which obtains in cupolas. But in the experiment there was no desulphurizing, which demonstrates how important the quantity of slag is for desulphurization. In cupola practice a desulphurizing of the iron is less

rely than a diminished transference of sulphur rom the coke.

DESULPHURIZATION BY VARYING WIND PRESSURES

In a small experimental cupola, 100 mm. in diameter, experiments were carried out to determine the absorption of sulphur under different wind pressures. The tuyeres were situated so low that it was not practicable to use large layers of full-sized coke. Therefore sulphur absorption from this was not considered. In order that the cupola should not freeze much more fine coke was necessary than in ordinary practice. The coke charge was 40 per cent. The results of the experiments were as follows:

Table 4.—Effect of the Coke and Wind Pressure on the Sulphur Content of Iron

	Sulphur, Per Cent	Silicon, Per Cent	Manganese Per Cent	Carbon, Per Cent
The iron before the remelting	0.082	3.207	6.42	3.29
Charges				
0.2 g. coke / 0.5 g. iron. / Little wind.	0.169	2.451	4.518	2.84
0.2 g. coke / 0.5 g. iron. / Much wind.	0.127	2.877	4.865	3.09
0.1 g. coke / 0.5 g. iron. / Little wind.	0.143	2.234	5.213	3.18
0.1 g. coke / 0.5 g. iron. / Much wind.	0.095	2.746	5.560	3.22

In experiment No. 1, in which the smallest amount of blast possible was used, the sulphur increased decidedly; it doubled. Since the full-sized coke was absent, in the weakly oxidizing flame of the fine coke the lowered carbon monoxide could not enrich itself. In the second trial, with much blast, less sulphur was absorbed than in the first experiment. A larger part of the sulphur in the coke must escape with the gases. Silicon, manganese and carbon decreased less also.

In order to obtain a more reasonable absorption of sulphur, smelting was attempted using only 20 per cent coke with little blast; under these conditions, in trial No. 3, still high sulphur, 0.143 per cent, was obtained. Only by excess of wind and 20 per cent coke, in trial No. 4, was a small sulphur absorption obtained. Success in making a pig iron without the absorption of any sulphur was achieved and indeed in the absence of any slag. To form a slag the coke consumption would have been higher and also the absorption of sulphur.

CARBON AS A DESULPHURIZER

In order to study the influence of carbon on the sulphur content of iron, a series of sulphur-iron alloys was made by smelting together nail scrap and sulphur. These products had the following percentages of sulphur: 36.29, 29.10, 26.44 and 1.45 per cent. The alloy with 36.29 per cent sulphur corresponds nearly to the formula FeS. To these alloys excess of sugar carbon was added and the mixture smelted. The results of their trials is shown in Table 5.

Table 5.—Influence of Carbon on the Sulphur Content of Iron

	First Smelting, Per Cent	Second Smelting, Per Cent	Third Smelting, Per Cent	Fourth Smelting, Per Cent
Sulphur content before carbonization	36.290	29.100	26.439	1.45
Sulphur content after carbonization	29.430	24.087	22.975	1.25
Carbon content	1.815	3.998	4.094	4.14

These show that the affinity of iron for carbon is reduced by the presence of sulphur and that carbon is not practicable as a desulphurizing agent.

EFFECT OF A MORE OR LESS OXIDIZING FLAME

The question whether, in a more or less oxidizing flame, the sulphur in iron is correspondingly burned to SO_2 was investigated. A foundry iron containing 0.538 per cent sulphur was poured into thin rods. A more or less strongly oxidizing flame was applied to rods of 10 mm. and the drops as melted received in a crucible. The result is shown in experiment No. 1 in Table 6. In the reducing part of an illuminating gas flame much air was introduced and this was heated up by as much oxygen as possible until the very thin rods melted, the effect being shown in experiment No. 2 in the same table. In the third experiment rods of only 3 mm. were used and the admission of oxygen reduced to a minimum in the oxyhydrogen blast flame. Table 6 shows that the absorption of sulphur is greater the stronger the oxidizing flame. A limit is set to desulphurizing only when the melting effect of the flame reduces the ability to take up oxygen. In a cupola no extensive desulphurization is possible by means of oxidizing gases because the products of the combustion of the coke contain SO_2 and the molten iron absorbs it.

Table 6.—Influence of a More or Less Oxidizing Flame on the Sulphur Content of Iron.

	Sulphur, Per Cent	Silicon, Per Cent	Manganese, Per Cent	Carbon, Per Cent
1. The iron before melting	0.538	3.650	0.678	3.30
Melted in a strongly oxidizing oxyhydrogen blast flame	0.336	3.422	0.568	2.96
Per cent of original content	63.5	94.00	84.00	90.00
2. The iron before melting.	0.443	2.966	0.459	3.11
After melting in an oxidizing illuminating gas flame	0.282	2.684	0.459	2.03
Per cent of the original content	63.5	90.00	100.00	65.00
3. The iron before melting.	0.515	3.00	0.459	3.18
After melting in a weakly oxidizing oxyhydrogen blast flame	0.341	2.82	0.393	3.09
Per cent of the original content	60.00	94.00	86.00	97.00

REMELTING HIGH-SULPHUR IRON IN CARBON CRUCIBLES

Repeated remelting of foundry iron rich in sulphur in carbon crucibles was followed by a slight desulphurization as Table 7 shows.

Table 7.—Effect of Remelting on the Sulphur Content of Iron

	Sulphur, Per Cent	Silicon, Per Cent	Manganese, Per Cent	Carbon, Per Cent
Original composition	0.538	3.65	0.678	3.30
After the first remelting	0.515	3.00	0.459	3.18
After the second remelting.	0.443	2.96	0.459	3.11

Dominion Sheet Metal Plant Completed

The Dominion Sheet Metal Company, Ltd., Hamilton, Ont., has completed the erection of a plant located in the industrial district of the east end of Hamilton, for the manufacture of galvanized sheets. The present building is 100 x 240 ft. and the plant is served by a joint belt line operated by the Grand Trunk, Canadian Pacific and the Toronto, Hamilton & Buffalo railroads, with tracks in the buildings.

Materials are handled by electric crane, and the pickling department has modern plunger-type pickling machines. The galvanizing equipment consists of four pots complete with conveyors, roller levellers, cooling tables and wheels. The product will be marketed under name of Premier galvanized sheets, and is the first to be made in Canada. Production will start September 1. A. J. Townsend, Canton, Ohio, had charge of construction and engineering. A. T. Enlaw is president and general manager.

Manufacturing companies in Pennsylvania which have hitherto been exempt from State taxation on capital actually invested in manufacturing have been assessed a minimum appraisement of $1,000 on capital stock, irrespective of the character of the activities or the amount of property invested in the State. At the 5 mills rate now in force this means that every such corporation in Pennsylvania must pay at least $5 State tax.

BUILDING STEEL ENDURANCE

An Analysis of the Protective Value of Building Specifications

Holabird & Roche, architects, Chicago, have just issued a report bearing upon the preservation of the structural steel in a building erected in that city in 1893-94, and recently razed to make way for a new building. The building at that time cost $500,000, and was fifteen stories in height. The construction features were: structural steel framework with joists, spaced 5 ft. apart; flat tile arches of porous terra cotta, porous terra cotta fireproofing, shallow spread footings on a blue clay foundation, locally called floating foundations, brick and terra cotta curtain walls. It was in good physical condition. The steel was painted with a proprietary brand of iron oxide paint, in accordance with the following specifications:

> The contractor will be required to paint all iron work and steel work one coat of the best quality of mineral paint before putting up. After it is set, carefully go over all work, clean, and remove all rust and dust, and paint another coat of the same kind of paint.

The condition of the paint varies from complete disappearance to "good as new." So far as protection to the general structure is concerned, the paint has deteriorated beyond all usefulness. In places there is no trace of it; over most of the steel the paint still shows but is broken up by rusted areas; in a few places it still has its color and luster over considerable areas. Where the paint was still in place, although it had a dead appearance, there usually was no rust underneath. Even where small blisters showed in the paint, the steel underneath was bright and free from rust.

There was no pitting of the steel observed, the rust occurring in flakes or layers. There was little adhesion of the rust to the steel. Some pieces having areas from 40 to 100 sq. in. were removed from webs of I-beams. These pieces were very dark brown in color on both sides, and the rust adhering to the beam under this scale was the same color. Its appearance suggests age and has no indication of recent formation.

By weighing some specimens of the rust scales and reducing to the equivalent metallic iron, the loss due to corrosion is computed to be 0.007 to 0.009 in. This is very much greater than the average loss, as these specimens represented the worst condition except in one case. One column in the first story showed rust amounting to perhaps four or five times the amount stated above. This bad rusting was along a pipe shaft, where the steel was doubtless subjected to moisture or circulation of air. The specimens which were weighed and converted to the equivalent metallic iron were taken from the inner sides of the webs of beam box girders. The space between the beams was not filled with fireproofing, and it is probable that these surfaces were not painted with a field coat. One or both of these conditions may account for the excessive rusting.

The footings were built of steel I-beams unpainted, embedded in Portland cement concrete. When removed they showed no corrosion. The pipes in the building were generally in fair condition. There is no record of any of them having been replaced since the building was constructed. However, one pipe, presumably a soil pipe, was so decayed that it could be broken as if made of earthenware.

It was specified that the terra cotta be attached to the steel frame "with substantial wrought iron or copper anchors, and thoroughly bedded in cement mortar." Wrought iron or steel was used. The anchors were generally in good condition, but some pieces were rusted so much that they were broken in wrecking. It is probable that these pieces were not well bedded in cement mortar at the joints where the rusting occurred.

The condition of this building seems to indicate that the exclusion of air and moisture is essential for the preservation of the steel and also of the paint. The appearance of the rust suggests that it may have been formed soon after the building was constructed and that it has not been progressive. Even if the worst case of rusting has been progressive and should continue at the same rate, it would be more than a century before failure of the member would result.

The present practice of incasing all structural steel in concrete, or plastering it with Portland cement mortar; of separating the pipe shafts from the steel; and of using greater care in covering terra cotta anchors, certainly safeguards the framework of the structure for a much longer period than the probable economic life of such buildings.

Frick Coke Company's Garden Prizes

Each year the H. C. Frick Coke Company, in order to promote the cultivation of vegetable and flower gardens by its employees at all its coke plants in the Connellsville regions, furnishes fertilizer and, in a number of instances, plows the ground and furnishes seed. When the gardens are at their full growth a committee of three competent farmers or business men is selected by the local superintendent to inspect the gardens and award prizes for the best cultivated and most valuable garden. At the larger plants three prizes are awarded for the best vegetable gardens, and the same number of prizes for the best flower gardens, and at the smaller plants two prizes each are awarded. Cash prizes awarded for the best vegetable garden are $10, $5 and $3, and where two prizes are awarded the amounts paid are $6 and $4. For flower gardens the amounts paid are $5, $3 and $1, and where two prizes are given $4 and $2. Certificates, framed, are made out by the inspection committee, countersigned by the superintendent and given to the prize winners. The results for 1915 are as follows: Number of vegetable gardens cultivated, 6551; total value of all vegetable gardens, as estimated by inspection committees, $177,005.70; average value of vegetable gardens, $27.02; number of first prizes awarded, 54 vegetable and flower gardens each; second prizes, 54 vegetable and flower gardens each; third prizes, 36 vegetable and flower gardens each.

Youngstown Sheet & Tube Extensions

The Youngstown Sheet & Tube Company, Youngstown, Ohio, has bought the 18-in. bar mill, floor plates, tables, some of the rolls and the hot saw formerly in the plant of the Wheatland Iron Company, Wheatland, Pa., from Max Solomon, scrap-iron dealer, Pittsburgh, who purchased the plant in 1913 but never operated it. The mill and other material will be removed to Youngstown, new continuous heating furnaces will be built, and it will be used in rolling grooved iron skelp in sizes from 6¼ to 15 in. inclusive, and also all sizes of socket iron for making couplings for the pipe mill. The present No. 2 bar mill in the Youngstown plant will then be used exclusively for rolling steel skelp, 5¼ to 15 in. wide inclusive.

The Sheet & Tube Company is considering the erection of three or four more open-hearth furnaces, and the project will soon be brought before the board of directors for action. The extensions to its plants now under way include 204 by-product coke ovens, two continuous Morgan bar mills, several hand mills, an office building and laboratory to cost about $300,000, and a hospital to cost upward of $100,000. It is operating its four blast furnaces, Bessemer and open-hearth steel works and finishing mills to full capacity. Its rod and wire mills at Struthers are practically sold up for the remainder of this year. The company is shipping large quantities of barb wire and some other materials abroad.

The Curtis & Curtis Company, manufacturer of pipe-cutting machinery, Bridgeport, Conn., announces that beginning next month 2 per cent of the value of the company's net shipments will be set aside for division among the employees. The company estimates that this will amount to about a 10 per cent increase in pay.

SOUTHERN PIG-IRON RATES

Northern Roads Must Share in 35-Cent Reduction and Make Reparation

WASHINGTON, D. C., Aug. 24, 1915.—An important decision involving freight rates on pig iron from points in Alabama and Tennessee to points in Central Freight Association territory, and involving also the proper division of such rates between Northern and Southern roads, has just been handed down by the Interstate Commerce Commission. The commission held that the rates attacked are unreasonable and it also prescribes a division of rates between roads operating north and those operating south of the Ohio River.

The case was brought before the commission by the Cross-Sheffield Steel & Iron Company against the Louisville & Nashville Railroad and practically every other important railroad system in the country. The commission directs the defendant carriers to establish rates from and to the points above indicated, the maximum of which shall be 35 cents per gross ton less than the rates in effect prior to Oct. 1, 1914. Northern roads are to bear 12 cents and Southern roads 23 cents of the reduction. The rates assailed were: From Birmingham district to Louisville, $3 per gross ton; to Chicago, $3.35 per gross ton. From the Chattanooga district the rates were certain differentials under the Birmingham rates; from other Alabama and Tennessee points the rates bore fixed relations to the Birmingham and Chattanooga rates.

By the decision of June 1, 1914, under a previous case the commission found that the rates attacked were unreasonable and that reasonable rates from the Birmingham district to the representative points named should not exceed $2.65 to Louisville or $4 to Chicago. To Boston, as typical of the East, a rate of $4.25, rail and water, was prescribed. An order was entered in accordance with the findings, effective Oct. 1, 1914. The carriers operating south of the Ohio River opened negotiations with those operating north of the river with a view to an agreement upon divisions of the through rates required to be established, but the Northern carriers declined to assume any part of the reduction. As only a few carriers in Central Freight Association territory were made parties to the original case, the new tariffs issued took in only points reached by such roads.

On Nov. 3, 1914, complainants filed a supplemental complaint alleging that the new tariffs were not in compliance with the commission's decision and order, and asking that such further order be entered as might be required to afford full and complete relief in the premises. The inquiry that followed resulted in a decision requiring the railroads to fix rates on a basis of 35 cents a ton less than the rates attacked. The commission directs a division of the pig-iron rates as follows:

> Upon all the facts of record we find that the amount of the original reduction in the joint through rates, established and to be established, the Southern carriers should bear 23 cents and the Northern carriers 12 cents. We further find that of the joint through rate of $4 from Birmingham to Chicago, the lines south of the Ohio River are entitled to and should receive $2.52, and that the lines north of the Ohio River are entitled to and should receive $1.48. All other joint through rates on pig iron from the Southern furnaces to points reached by defendants' lines in central freight association territory, as well as those already reduced under the order effective Oct. 1, 1914, as those herein required to be reduced, should be apportioned between the carriers north and south of the Ohio River on the same basis as named for the Birmingham-Chicago rate. Orders will be entered in accordance with the conclusions herein announced. In the matter of the divisions of the joint through rates the order will be made effective as of Oct. 1, 1914, the date when the original order took effect.

Claims for reparation were made in connection with the case. The commission announced that parties claiming reparation should present statements showing as to each shipment upon which such claim is made, the date and route of movement, point of origin and point of destination, weight, car number and initials, rate applied, charges collected and the amount of reparation due under the present finding, which statements should be submitted to defendants for verification. Upon receipt of statements so prepared and verified, the matter will be further considered by the commission with the view to issuing an order for reparation.

Matters which relate to the rate on pig iron from the South to trunk line territory and New England points will be disposed of in a later report. W. L. C.

REROLLING RAIL STEEL

Resulting Products a Considerable Factor in a Number of Lines

BY C. A. TUPPER

The rerolling or working up of rail steel for industrial purposes has assumed considerable importance. The production of bars for reinforcing concrete is probably the largest single use for rerolled rail heads, while flats, channels, angles, tees and diamonds can be secured from the rail section as a whole, including the web and flange, together with straight and U bars of various dimensions. Such bars and shapes now find an extremely varied application, as in the manufacture of agricultural machinery and implements, such as spreaders, plows, harrows, cultivators, mowers, rakes and harvesters. This is, in point of tonnage, the most considerable use and includes all of the material above mentioned, with some special shapes.

The furniture industry affords another important outlet, including bars and angles for metal beds, couches and springs, especially the numerous combination and folding types used in apartment buildings. Likewise metal school and office furniture, store fixtures, show cases, etc., take large quantities. Wagon and carriage builders are naturally among the heaviest consumers. Bars for sleigh shoes and runners and for toe calk steel also come from rerolled sections. In a similar category are boat keels, angles and clamps. In the manufacture of narrow gage cars and trucks, wheelbarrows, and other conveying or transfer equipment a rapidly growing use for the material is found. Apparatus for exercise and play, represented to the greatest extent by lawn swings, takes an appreciable quantity of bars and angles, with some minor specialties.

The production of builders' hardware offers a further field, and one fast being extended, for the utilization of rerolled steel, particularly the smaller shapes made from webs and flanges. Angles and bars for telegraph and telephone line material were called for early in this movement, followed by their application to electric power and railroad systems for transmission, feeder and trolley circuits, also as hangers for electric transformers and lightning arresters and as built-up poles or supports for various electric power equipment. Analogous to the last named is the use of bars and angles for power line towers or wind mill towers, where their service in withstanding the shock and strain of storms, vibration from the passage of heavy interurban cars, etc., has been notably good.

With the return of normal prosperity a factor in the situation will be the availability of this material in lots suited to the requirements of the average manufacturer, who is otherwise apt to be placed at a disadvantage compared with larger buyers or those more forehanded in placing orders. Mills rolling bars and angles from rail steel are generally in a position to make quicker shipments of short lengths and varied sizes than other plants, and they naturally have a greater interest in caring for this class of trade.

It is to be noted further that the extension of rerolled rail steel products into so many branches of manufacturing is a matter of congratulation to the entire metal field, because of the impulse it has given to all accessory lines, such as bolts, nuts and screws. Also, by maintaining the scrap value of old rails, it should add to the likelihood of replacements, and in this way exert an influence decidedly beneficial to the industry as a whole.

Judicial Decisions

ABSTRACTED BY A. L. H. STREET

WHEN MACHINERY BROKERS ARE NOT SUBJECT TO LICENSE TAX.—It being beyond the power of a State to lay burdens on interstate commerce, control of which is exclusively vested in Congress, a State or city cannot levy a valid license tax upon persons engaged in soliciting orders for goods to be shipped from another State, where the orders are accepted or rejected. (Missouri Supreme Court, Kansas City vs. McDonald, 175 Southwestern Reporter, 917.)

RECOVERY OF PRICE OF PROPERTY DESTROYED.—Where a gas engine or other personal property is sold under the ordinary conditional sale contract, the fact that the seller has reserved title until payment of the purchase price does not deprive him of the right to recover the amount on destruction of the property by fire, although the fire was not caused through any fault of the buyer. (Charles A. Stickney Company vs. Nicholas, 152 Northwestern Reporter, 554.)

DAMAGE FOR BREACH OF CONTRACT.—Provisions in a contract for payment by one of the parties of a stated sum in the event of a breach of the agreement on his part will not be enforced when the amount is manifestly larger than the amount of damages actually sustained by the other party. (Minnesota Supreme Court, Schommer vs. Flour City Ornamental Iron Works, 152 Northwestern Reporter, 535.)

INSPECTION OF C. O. D. SHIPMENTS.—When a seller of goods sends them by express C. O. D., the express company properly permits the consignee buyer to inspect them before paying for them, but the company takes the risk of permitting the buyer to obtain full possession without paying the charges. (Mississippi Supreme Court, Grace vs. Southern Express Company, 68 Southern Reporter, 172.)

EFFECT OF TAKING ORDER FOR PAYMENT.—When a debtor gives his creditor an order on a third person for payment of the amount due, acceptance of the order will not prevent the creditor from still holding the debtor, on the third person failing to pay, unless it clearly appears that it was intended that the debtor should be discharged from further liability on giving the order. (New York Supreme Court, American Luxfer Prism Company vs. Barloticius Star Iron Works, 152 New York Supplement, 1014.)

NOTICE TO SELLER OF DEFECTS IN MACHINERY.—The common provision in contracts for sale of machinery requiring the buyer to give the seller written notice of defects in the machinery and opportunity to remedy them does not apply to cases where a machine delivered is of a type different from that contracted for. (Texas Court of Civil Appeals, Rumely Products Company vs. Moss, 175 Southwestern Reporter, 1084.)

EMPLOYER'S DUTY TO MINOR EMPLOYEES.—In a suit for injury to a boy while engaged at work at an electric drill, it is held that he assumed all risks of injury arising from dangers that he was capable of comprehending, but that his employer was bound to warn against unappreciated risks, and bear in mind the boy's inexperience and consequent necessity for instruction. (Florida Supreme Court, Coons vs. Pritchard, 68 Southern Reporter, 225.)

TIME FOR DELIVERY OF GOODS SOLD.—Since provision in a contract to sell goods for delivery at a certain time is presumed to have been understood by the parties as being an important feature of the contract, a buyer of goods to be delivered Aug. 15 was entitled to reject delivery tendered Sept. 28. (North Dakota Supreme Court, Sunshine Cloak & Suit Company vs. Roquette Brothers, 152 Northwestern Reporter, 359.)

DAMAGES RECOVERABLE FOR BUYER'S BREACH.—When one who has contracted to buy goods to be specially manufactured for him by the seller repudiates the agreement after partial deliveries have been made, the seller, in addition to recovering the agreed price for goods actually manufactured and delivered, is entitled to recover the excess of the contract price above the cost of producing the remainder of the goods called for by the contract. This measure of damage is not affected by any opportunity the manufacturer may have to operate his factory at full capacity in turning out goods for other customers. (Court of Appeals of New York, Oswego Falls Pulp & Paper Company vs. Stecker Lithographic Company, 109 Northeastern Reporter, 92.)

ASSUMPTION OF RISKS BY MACHINE OPERATORS.—One who accepts employment to operate machinery assumes the risk of injury incident to his work, except as to hidden dangers against which he is not warned by his employer. The Massachusetts statute to the effect that an employee does not assume the risk of being injured through defects in ways, works or machinery, where complaint of a defect has been made and it has not been repaired within a reasonable time, must be construed to apply only where an injured person is the complaining employee, or is one of those in whose behalf the complaint was made. (Massachusetts Supreme Judicial Court, Shea vs. American Hide & Leather Company, 109 Northeastern Reporter, 158.)

RESPONSIBILITY OF AGENT OF UNDISCLOSED PRINCIPAL.—By making a contract ostensibly in his own name without disclosing to the other party to the agreement the fact that he is acting as the agent of a third person, one renders himself personally liable for any breach of the contract. (Kansas City Court of Appeals, Heller vs. Ferguson, 176 Southwestern Reporter, 1126.)

ACCUSATION OF INFRINGEMENT AS LIBEL.—Although it is actionable libel to falsely accuse a manufacturer of infringing patents, substantial damages cannot be recovered without proof of loss of business on account of the accusation. (Texas Court of Civil Appeals, Butcher vs. Cummer Mfg. Company, 176 Southwestern Reporter, 82.)

TRAVELING SALESMAN'S LIABILITY.—A traveling salesman may be held liable to his employer for damages sustained by the latter through sales made on the strength of fraudulent misrepresentations by the salesman as to the financial responsibility of the buyers. (Texas Court of Civil Appeals, Cooper vs. Golding, 176 Southwestern Reporter, 92.)

IMPLIED WARRANTY—RIGHTS OF BUYER.—When a written contract for a sale of machinery contains a specific warranty of the machinery, it will be presumed that the parties did not understand that the seller was making any further warranties of its suitableness. When a defect in machinery bought is slight and can be readily repaired at small expense, the purchaser will not be permitted to rescind the purchase; his only legal remedy is to recover the cost of remedying the defect. (Arkansas Supreme Court, C. B. Ensign & Co. vs. Coffelt, 176 Southwestern Reporter, 735.)

INSPECTION OF MACHINERY.—If a contract for sale of an engine provided for inspection by the purchaser and he examined all except the fire box, and omitted to inspect that because he could not do so without soiling his clothes, he is not necessarily precluded from relying upon statements fraudulently made to him by the seller's representative regarding its condition, or from making such statements ground for rescinding the purchase. Whether a sufficient reason existed for omitting a complete inspection is a question of fact to be determined upon all the circumstances of the case. (Kansas Supreme Court, Aultman & Taylor Machinery Company vs. Schierkolk, 149 Pacific Reporter, 680.)

RIGHT TO RESCIND SALE CONTRACT.—A second-hand molder was sold on condition that the price would be paid within thirty days, and that title to the property should remain in the seller until payment. Another clause provided that the buyer should have no right to reject the machine after thirty days following receipt of the machine. Held, that the purchaser had no right to reject the machine except for good cause; and that on non-payment of the price the seller had the option to retake the molder or treat the buyer as the absolute owner of it and bring suit to recover the agreed price. (Connecticut Supreme Court of Errors, United Machinery Company vs. Metzel & Sons, 94 Atlantic Reporter, 356.)

BRITISH STEEL EXPORTS

ly Compares Favorably With Last Year—Steel and Iron Bars Increase

Great Britain's iron and steel exports, while less n one year ago, are gradually increasing as the war ogresses. For July the total, excluding iron ore d scrap, was only 7.33 per cent less than for July, 4, or 346,661 gross tons, against 374,099 tons in ly, 1914. In June the decrease from June, 1914, s 25 per cent. For the first seven months of 1915 e decrease was nearly 35 per cent, the total to Aug. 1915, being 1,795,163 tons, against 2,750,363 tons. e falling off in values was from £29,224,242 to £22,-3,730. Exports of pig iron to Aug. 1, 1915, were 8,327 tons, against 516,446 tons to Aug. 1, 1914, a crease of nearly 64 per cent.

Steel-bar exports continue to show large expan-n. For July, 1915, they were 39,574 gross tons com-ared with only 17,762 tons in July, 1914. Of these tals France took 25,325 tons, as compared with only 5 tons in July a year ago. The total exports of steel rs for the first seven months of this year were 268,-6 tons, compared with 127,933 tons to Aug. 1, 1914, increase of nearly 52 per cent. France took the lk of this or 187,356 tons. For the first time since e war began exports of wrought iron bars exceeded ose of any corresponding month of the year previous. July this year they were 8104 tons, against 6834 ns in July, 1914.

In galvanized sheets the falling off in the first seven nths of this year was 239,813 tons or nearly 55 per nt, the exports to Aug. 1, 1915, being only 198,545 ns.

Exports of ferromanganese in July, 1915, were out 16,500 gross tons, compared with about 13,000 ns in July, 1914. To Aug. 1, 1915, they were about ,000 tons, compared with about 69,500 tons to Aug. 1914. Imports of manganese ore in July were only ,632 tons, against 32,709 tons in July, 1914. Man-nese ore imports fell from 278,174 tons up to Aug. 1914, to 154,158 tons up to Aug. 1, 1915, or 44.5 per nt.

British imports of iron and steel, apart from iron e and scrap, in July, 1915, were 134,444 gross tons, compared with 197,823 tons in July, 1914. To Aug. the imports were only 645,456 tons, against 1,368,812 ns to Aug. 1, 1914, a decrease of nearly 53 per cent.

Iron-ore imports to Aug. 1, 1915, showed a slight crease over last year, being 3,666,789 tons this year d 3,616,545 tons last year. Crude zinc imports were 17 tons in July this year and 9840 tons in July, 1914. or the seven months to Aug. 1, 1915, they were 49,-0 tons, against 66,705 tons to Aug. 1, 1914.

To Smelt Tin at Pittsburgh

The Standard Smelting Company, Pittsburgh, has en organized with a capital of $100,000, and has in-talled in the works formerly occupied by the R. D. uttall Company two Wile electric furnaces for smelt-g Bolivian tin concentrates. Another furnace of the me type is now being installed. The company will en have a capacity for smelting 20 tons of concen-rates every 24 hours, from which it is expected to ecover 12 to 14 tons of tin. The operation of the Wile lectric furnace in the smelting of tin concentrates is ated to have been very satisfactory. The high tem-erature secured, about 1600 deg. C., allows the iron the bath to slag off, but the pure tin is retained. he company expects to sell the greater part of its n output to consumers in the Pittsburgh district. The corporators of the Standard Smelting Company are . S. Glenn, C. E. Glenn, C. R. Buchheit and R. S. Vile, the latter being president of the Wile Electric urnace Company, Pittsburgh.

The Virginia Iron, Coal & Coke Company, Roanoke, a., is reported to have plans for putting its blast urnace at Middlesboro, Ky., which has been down for everal years, in operation again.

HIGHER IRON AND STEEL RATES

Inceases on Various Products to Points West of Missouri River Will Stand

WASHINGTON, D. C., Aug. 24, 1915.—A decision in what are known as the iron and steel cases has just been promulgated by the Interstate Commerce Commission. The proceedings were instituted by the Commercial Club Traffic Bureau of Topeka, Kan., against the Atchison, Topeka & Santa Fé Railway Company and other carriers. Three issues were presented, two involving proposed increases in rates and the third an attack on certain existing rates. In each instance the commission sustained the railroads, and the tariffs involved become effective Aug. 28. The railroads proposed:

1. To readjust rates on iron and steel articles moving from Mississippi River points, Missouri River points, Chicago and territory intermediate to Chicago and the Missouri River on the one hand, to Utah and Colorado points and to points in Kansas on the other.

2. To continue existing rates, despite the protests of shippers, on iron and steel articles from Pittsburgh and St. Louis to Hutchinson, Wichita and Topeka.

3. To readjust rates on iron and steel articles from St. Louis and from Pittsburgh and other points in Central Freight Association territory to points in Oklahoma and to Fort Smith, Ark.

This group of cases involves substantially all the rates on iron and steel articles in the region affected. The following table shows the present rates on iron and steel articles from Chicago and Missouri River to Montana and Utah and the proposed rates which the commission authorizes. Rates are stated in cents per 100 lb.

	Present	Proposed
Average rate Chicago to Montana	93.4	....
Average rate Chicago to Utah	89.1	92.05
Average rate Missouri River to Montana	78.2	....
Average rate Missouri River to Utah	71.7	74.35

In the proposed adjustment of rates to Utah there are reductions as well as increases; but the general change contemplates an increase in the average of the rates. The tariff shows 43 items in the list of iron and steel articles on which commodity rates are proposed. From the Mississippi River 21 show increase, 21 reduction, and 1 no change; from Chicago 25 show increase, 5 reduction, and 13 no change; from the Missouri River 26 show increase, 16 reduction, and 1 no change; and from Peoria 22 show increase, 20 reduction, and 1 no change.

Certain shippers from the Pittsburgh district protested against the proposed advance in rates on wrought-iron pipe from Chicago, Mississippi River and Missouri River to Salt Lake City and to Denver, but counsel for these shippers stated on oral argument that his clients were concerned particularly in the rate on wrought-iron pipe to Denver. The following table shows the relation of the prior, present and proposed rates on wrought-iron pipe and other iron and steel pipe to Utah common points, in cents per 100 lb.:

From	Prior Rate	Present Rate	Proposed Rate
Chicago	95	60	69
Mississippi River	90	58	64
Missouri River	80	48	55

The effect of the decision on rates from St. Louis and from Pittsburgh and other Central Freight Association points to points in Oklahoma and Arkansas is to confirm advances of 5 to 12 per cent on such products as wire nails, woven wire fence, roofing sheets, bar iron, beams, horseshoes, nuts and bolts, a slight reduction in hinges and a reduction of 16 per cent in wagon iron, to Oklahoma points. W. L. C.

Appeal in the Steel Corporation Suit

It was stated last week at the Department of Justice in Washington that owing to the voluminous record in the dissolution suit against the United States Steel Corporation, brought under the Sherman anti-trust act, final appeal in the case may not be filed until February or March, 1916.

ESTABLISHED 1855

THE IRON AGE

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Published Every Thursday by the DAVID WILLIAMS CO., 239 West Thirty-ninth Street, New York

W. H. Taylor, *Pres. and Treas.* Charles G. Phillips, *Vice-Pres.* Fritz J. Frank, *Secretary* M. C. Robbins, *Gen. Mgr.*

BRANCH OFFICES—Chicago: Otis Building. Pittsburgh: Park Building. Boston: Equitable Building. Philadelphia: Real Estate Trust Building. Cleveland: New England Building. Cincinnati: Mercantile Library Building.

Subscription Price: United States and Mexico, $5.00 per year; single copy, 20 cents; to Canada, $7.50 per year; to other foreign countries, $10.00 per year. Entered at the New York Post Office as Second-class Mail Matter.

The Industrial Relations Commission

If the purpose of creating a Commission on Industrial Relations had been to foment unrest and discontent, the scheme could hardly have been more successful. The report of the commission, which has been given to the daily press, is of such a character that its publication and distribution by the United States Government will be a matter of sincere regret. It makes the judicious grieve, as it affords a rich source of just such material as can be best used to advantage by those who constantly seek to array the poor against the rich, the workman against his employer and the shiftless against the thrifty. The commission is an official body, created by Congress, with its members appointed by President Wilson. Its findings are, therefore, practically stamped as authoritative, and when distributed through Government channels will carry with them a claim to the respect and serious consideration of the people. It must be conceded that the report affords much food for thought but hardly of the kind which should attach to an official document of at least presumedly national importance.

The demand for this commission was not general, but came from a limited part of the people. Some of these were honestly impressed at the time with the belief that unrest prevailed so widely that the Government should take heed of it and endeavor to get at the cause for the purpose of applying a remedy. Others who urged such a commission hoped to be appointed on it for the purpose of exploiting their peculiar views on the industrial or social situation. Practically everybody has been disappointed in the outcome. The personnel of the commission was not of a character to give it high standing in the nation nor even to cause it to be regarded as a thoroughly impartial body. Its hearings were not conducted by its chairman in a manner to win the approbation of the fair-minded. Some of its members must be credited with the disposition to do justice to all classes of citizens, but unfortunately they found themselves hopelessly in the minority.

The report, instead of being the unanimous expression of the members, is split into the presentation of the opinions of groups. Apparently, the whole field of those who would change or overturn the existing social order has been diligently exploited for use in this remarkable document. There is no lack of remedies recommended for the amelioration of the unfortunate or for the benefit of those who lack the ability or the energy to better their condition. The vaporings of socialists, the dreams of single-tax advocates, the ambitions of those who would free militant labor organizations from all restraint of law, the theories of that set of philanthropists who would have the nation undertake the stupendous task of insuring the sick and the unemployed, of pensioning the aged and of enabling tenants to become owners—all are gravely set forth as essential to the promotion of the welfare of the people of this country, who here enjoy better opportunities for advancement than in any other land. With less poverty than is to be found elsewhere, one group asserts that possibly half "of the families of wage-earners employed in manufacturing and mining earn less than enough to support them in anything like a comfortable and decent condition," and that this "is a direct result of the lack of strong labor organizations, by which wage-earners could force the payment of living wages." It is somewhat refreshing to find that another, but a very small, group of the members of the commission has the courage to dissent emphatically from the opinions of their fellow members, not only opposing the proposition to legalize the secondary boycott but also citing abundant testimony to show that many employers are frightened off from recognizing or dealing with organized labor by "the fear of sympathetic strikes, jurisdictional disputes, labor union politics, contract breaking, restriction of output, prohibition of the use of non-union-made tools and materials, the closed shop, contest for supremacy between rival unions, acts of violence against non-union workers and the properties of employers, and apprenticeship rules."

A careful reading of the report, as published in the daily press, leads one irresistibly to the conclusion that it could easily have been written without any hearings whatever. The theories advanced and the recommendations made are such as to indicate preconceived notions, needing no evidence upon which to base them or from which to draw sane conclusions. The suggestion to create such a commission was a mistake and the vast sum of money spent in its so-called investigation has been worse than wasted.

The Pig-Iron Rise

Buyers of pig iron have something to think of in the gap between the price at which they bought in March and what they are asked now to pay for iron they will use in the first half of 1916. Buffalo is a large producer, and figures from that market apply to many buyers in Eastern districts. Between $11.50, at which a number of them bought in March iron they are now melting, and $14.50, which they are asked to pay to-day, the spread is $3; it is $2.50 for those who bought at $12 in the well-remembered "drive" in that district in early spring. In the South there is a $3 step from the $9.50 figure of not many weeks ago, and $12.50, which one prominent producer has asked for first half iron. In other districts the advance represented in prices now quoted for the early months of 1916 is less than in the cases cited, but all, with the exception of Chicago pig iron, which has been slow to catch step, are enough to cause buyers to canvass the situation with care. Meanwhile there are those among consumers who suggest that such rapid advances as have come in recent weeks may be followed by reaction. On the other hand, as signs of a seller's market increase, there are predictions that under continued prosperity in the iron and steel trades the coming year, if not the next six months, will carry the advance considerably farther.

The comparative suddenness of the rise, put alongside those of this year, in steel products and the fact that it represents in part the seller's idea of what the situation warrants rather than prices fixed by a general buying movement rapidly filling up order books, in an advancing market of the well-remembered type, have added to the perplexities of the buyer. The working up of prices in bars, plates and shapes—taking these products as typical of the finished material market—has been a gradual process in which the minds of buyers have had ample time for adjustment to each new level. That, in fact, has been an important feature of the psychology the steel manufacturers used in working up their market in months of incomplete employment of capacity—the psychology of dangling a future price before the buyer's mind until he became used to it. Finally, and of necessity, conditions must reinforce the psychology, and in this case they did.

Pig iron producers set over against the suddenness of their advances the notorious persistence of their market in its profitless rut long after the steel trade had been on the march toward present profitable conditions. They do not ignore the existence of idle furnaces that might blow in at present prices. Merchant furnaces produced 19,800 tons a day in July (and are probably doing 1000 tons a day better now) whereas in February, 1913, they produced 28,000 tons a day. But merchant furnaces now out of blast, it is argued, must get ore and coke, and the increase of producing forces in both lines under present labor conditions is not easy. Coke will be higher for the first half of 1916—how much higher buyers and sellers are now trying to determine, but enough probably to add at least 50 cents to the present coke cost of a ton of pig iron. It is the uncertainty on this point that has caused some furnace men who buy all their coke in the market, to postpone selling iron for 1916. At the same time it is a question if more than a few of the furnaces now out could make a profit, even at to-day's low price for ore, short of $14.50 pig iron at Central Western furnace.

The question is raised whether the war demand for steel is not being made the basis in large part for the new attitude of foundry pig iron producers. No doubt in some degree that is a factor. But it is pointed out that it may come to have a very direct bearing on the foundry iron situation if the steel companies should place orders for basic iron with furnaces that otherwise would be adding to the output of foundry iron. That has happened at Pittsburgh this week, one such sale being of 25,000 tons, and it could happen also at Buffalo and elsewhere.

There is no doubt, however, that at length the improvement which has been under way for months in steel products has been showing itself in the foundry trade. Stove and furnace work is slower than the rest, and malleable foundries are held back by the railroad situation, but machinery foundries are steadily working up, and the total melt of foundry iron is plainly increasing. A $9,000,000,000 to $10,000,000,000 crop year and the railroad buying that is expected with it are main props in the pig iron producer's hopes. He is apt to point also to the size of the advances already paid for 1916 iron by founders who now know into what work it will go. At the same time, if his experience reaches back two decades or so, he has plentiful reminders of the results of overdoing price advances. He knows too well the dangers of reaction invited by the unwarranted effort in some quarters to inject excitement into the present perplexing situation.

Railroad Buying

The steel trade is full of surprises these days, and one of them is that full capacity operations are expected to continue when the railroads are giving no sustained support to the market. Estimates that once secured fairly general acceptance were that the railroads normally consume from 30 to 50 per cent of the steel industry's output. In very recent years these estimates have been revised, it being thought that possibly the steel trade could peg along with a fair degree of prosperity if the railroads should take 20 per cent of the output. Even that, however, would mean 5,000,000 or 6,000,000 tons of finished steel a year, not counting what the railroads might buy in pig iron or iron and steel castings. They are taking nothing approaching such a tonnage.

Rail purchases for the current year have been but little greater than those for 1914, when the production, excluding export rails and light rails, did not exceed 1,500,000 tons. Thus far this year only about 1000 locomotives have been bought, approximately half of these being for export, so that the railroads have not taken as much as 100,000 tons of steel in the form of locomotives. Freight car orders make almost as poor a showing, since thus far this year freight car orders placed, excluding export orders, total only about

50,000 cars, including cars built in railroad company shops. Recently the buying appeared heavy because so much of it was concentrated in the two months, May and June. At the present time there is scarcely any car buying. The large number of cars now idle may be required during the crop moving season, but can reappear later, and a shortage during the crop moving period could not be averted by placing orders now. In structural work the railroads have obviously been very light buyers, as attested by current reports, as well as by the compilations of the Bridge Builders' and Structural Society, whose reports of structural lettings during the first six months of this year show an average of only 54 per cent of the estimated capacity.

In the period of full steel mill activity starting in 1912 and ending in 1913 surprise was expressed that operations could be on so broad a scale when the railroads were light buyers compared with their activity in 1905 and 1906. In the present movement the railroads occupy even a much lower position. And now that the steel companies are doing so well with so little help from the railroads there will be an inclination to the same old railing against the shortsightedness of the roads in putting off their buying until after prices had gone up and the mills had become independently full of orders. Justified as all such criticism has been for years, there is much to be said in extenuation of the course of the railroads in all the uncertainties of the two years last past. It should be considered also that this waiting policy has only stored up a greater tonnage against the later needs of the steel mills and that it will be the means of bolstering their prosperity, when some of the transient props now serving so well have been withdrawn.

Bessemer and Open-Hearth Steel

The problem of how to make buyers accept Bessemer steel has been before the steel trade in the past two or three months, as it was in the winter of 1912-13, and it seems to have been solved in a fairly satisfactory manner, as the existing Bessemer steel making facilities, with trifling exceptions, are fairly well employed. Three years ago, when open-hearth steel became scarce, the mills were not altogether so fortunate. Doubtless they have profited by experience, but at any rate two or three months ago several of the large steel interests making both Bessemer and open-hearth began a systematic effort to switch as many orders from open-hearth to Bessemer as was possible. In many cases the matter was in their own hands, for they had sold steel with their option to furnish either Bessemer or open-hearth, and had previously elected to ship open-hearth, presumably because the cost of production figured as a not inconsequential item when every cent counted. In other instances the consent of buyers had to be obtained.

The problem of finding employment for Bessemer capacity when open-hearth steel is scarce has been tending to solve itself, to the extent that Bessemer steel making capacity has not increased while there has been a large increase in open-hearth steel capacity, so that the public can be given a larger percentage of open-hearth than formerly.

Bessemer steel is even figuring more largely in rails, for as reported in THE IRON AGE last week the Steel Corporation has taken an order from Russia for Bessemer rails largely to be rolled at South Chicago. Russia had previously bought large tonnages of rails in the United States and the presumption is that those were largely if not wholly open-hearth. Conditions at the rail mills are such that the foreign buyer, to whom the rail making interests do not owe the obligation they do to their steady customers at home, must deal with the seller largely on the seller's terms.

Since Bessemer steel remains the favorite material for some descriptions of finished steel at least, and since in some other cases there is little if any choice, the question what is to become of the remaining Bessemer steel making capacity in the United States seems to be in a fair way of settlement. The Bessemer capacity does not grow and the total demand for steel grows, so that the proportion of Bessemer can continuously decrease without the need of any abandonment of facilities representing a very considerable capital investment.

CORRESPONDENCE

Postoffice Efficiency

To the Editor: In view of the current agitation for Government ownership of public utilities, the following incident will prove of interest:

Two gentlemen stood conversing in the selling office of a concern, the manufacturing plant of which was located just across the river in a neighboring State. The stenographer approached with two large envelopes in her hand, containing the factory mail, and asked one of them if he wished to take the mail back with him. Taking out his watch and noting it lacked but two or three minutes of 5 o'clock, he replied: "No, I am going straight home. You had better drop it in the box." The young lady went out at the same time and it was noted that she carried the two factory envelopes along with the other mail. In accordance with the usual custom, the mail next morning was placed on this official's desk to be opened and sorted, but one of the envelopes in question was among the missing. Telephone communication between the factory and the selling office disclosed that dame Fate had taken a hand in the matter and seen to it that the missing envelope contained the more important mail.

In the afternoon delivery, which was shortly after 3 o'clock, the truant arrived. The envelope had been opened, not torn as might be the case if injured in transit, but slit along the top as with an opener. The contents were intact and whether this was a case of tampering or opening by mistake is immaterial. The point is that after three weeks' investigation by the postoffice at place of mailing, the following report was rendered by the postmaster at point of delivery, the complaint having been forwarded to him:

"Records of this office show that pouch from —— was received at 9.23 p. m. Jan. 28 and mail contained in same would, in regular course, make connection with first a. m. delivery leaving at 7.15 a.m. Jan. 29. After a very thorough investigation, this office is unable to furnish any information as to reason of delay or opening and resealing of envelope. No unusual mail condition or irregularity here."

Having received this very enlightening report, the matter was referred to Washington. After a further investigation of two months and a half, Washington made a report couched in almost the same words as the one quoted above and, in addition thereto, a deprecatory paragraph stating that "the department regrets very

such any annoyance or inconvenience to which you may have been subjected in the matter, and special instructions have been issued to all concerned regarding the careful handling of mails addressed for delivery at ———, with a view to preventing further cause for complaint."

Taking the reports at their face value, the only conclusion to be drawn is that the envelope itself accomplished the transformation while concealed in the depths of a mail pouch. Experience does not bring to mind any case of a common carrier dismissing its responsibility with such supreme nonchalance.

What a prospect to contemplate in the event of the Government acquiring the ownership of all transportation facilities! Having undoubtedly had a similar experience in innumerable instances, why are the manufacturers so lukewarm in the propaganda of a campaign of opposition to Government ownership?

H. D. MURPHY.

Uniqueness of the Iron-Carbon Combination Reemphasized

To the Editor: The chemical elements, as arranged in the periodic system according to their atomic weights, bear a close resemblance in properties and characteristics group by group. But there are important exceptions to this notable law of periodicity.

Iron, nickel and cobalt, by their position in the periodic classification and by a comparison of their properties, are very closely related. But when carbon comes into the account this correspondence is interfered with in a very striking manner. By adding a small percentage of carbon to pure iron, otherwise an almost useless metal, the properties of the latter, as is well known, are completely transformed. It can then be hardened and assume a cutting edge. On this hardening property of steel very much of our engineering advancement rests. If, then, the three metals named are so closely related by nature's laws, three steels should reasonably be possible, two of them containing no iron. But the recent researches of Professors Arnold and Read, which have been referred to in THE IRON AGE, show on how delicate a bond the wonderful properties of steel depend. It is found that combinations of nickel or cobalt with carbon are so unstable that when they are heated the carbon separates from the metal as graphite. Even hammering a "nickel-carbon steel" precipitates the carbon as graphite. If iron behaved in the same manner it would turn, if in the form of tool steel, into cast iron when tempered. Some delicate molecular bond is responsible for the existence of iron-carbon steel and for the interference with nature's otherwise orderly progression.

The value of the wonderful modern high-speed steels depends on this important exception. While the additions of some of the rarer elements to the ordinary iron-carbon steels have revolutionized the possibilities of cutting tools and made real the dreams of many inventors, it would all be still unrealized but for the property of hardening that carbon bestows on iron, the reason for which remains to this day a mystery.

IRON-CARBON.

Acceptances in the Export Trade

To the Editor: Under the Napoleonic code a man is guilty until proved innocent; under our code a man is innocent until proved guilty. Another striking feature of the Napoleonic code is that the man who places his signature in acceptance of a draft and does not pay that draft when it falls due has committed a criminal act, while a man borrowing money on his note where the Napoleon code or old Roman law is in force and does not pay the note when due has only committed a civil offense.

The European banker, relying greatly upon the above feature, has always given the preference to an acceptance. Under the banking law of the United States our banks are not permitted to buy drafts without recourse against the shipper of the merchandise, but our banks are permitted to purchase the note of the man receiving the merchandise. Our law is forcing the American bank to take an inferior obligation when there exists one of greater value.

It stands to reason that if there are any failures in Latin America the American banks and their branches will suffer the most, as naturally a man before failing will take care of those obligations which involve a criminal liability in preference to those on which only a civil action can be maintained. European banks are able to buy foreign mercantile acceptances without recourse against the manufacturer and in this form a large volume of business is done, but wherever the American flag has gone this law has been changed, and an accepted draft has had to take the same court standing as a note. This is the case in Cuba, Porto Rico and the Philippines.

European bankers have criticized the action of the United States Government in changing the banking law in these countries and are amazed that we do not change our banking laws to permit our banks to take an obligation of greater security instead of one of inferior value.

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At the recent annual meeting of the Toledo Machine & Tool Company, Toledo, Ohio, Henry J. Hinde was elected president, succeeding E. P. Breckenridge, who has been president for ten years and who retired at his own request. Mr. Hinde has been vice-president and general manager for many years. L. J. Hinde was elected vice-president and sales manager and Charles W. Greening secretary-treasurer. The new board of directors includes H. J. Hinde, L. J. Hinde, E. P. Breckenridge, S. D. Carr, I. N. Bushong, and E. C. Edwards.

The Iron and Metal Markets

MANY PRICE ADVANCES

Steel Corporation Not to Buy Pig Iron

An Independent Company Buys 25,000 Tons—Railroads Overstay Their Market

Prices of pig iron, semi-finished steel and of a number of finished products have advanced in the past week and with mills falling further behind in deliveries premiums for early shipment are appearing. Domestic demand, while not given as much publicity as foreign orders, is of more importance in some lines than has been credited.

That the Steel Corporation would buy pig iron has been persistently reported, but it is stated on the highest authority that it will not. It has seven Northern furnaces of modern caliber that can yet be put in and the furnaces now active, 90 per cent of the total capacity, are making larger outputs than ever. A Pittsburgh steel company has just bought 25,000 tons of basic iron for this year, and the probability of other purchases by steel companies has had a marked effect in stiffening the pig-iron market.

Leading steel companies look for a continuance of the present rate of operations through the year and are counting upon its projection some distance into 1916, having ceased to borrow trouble over the results of a sudden ending of the war. No actual scarcity of labor has developed at iron and steel works. The Steel Corporation, with an 80 per cent coke operation, has found no labor shortage in that field.

The heavy demand for large steel rounds is still easily the leading feature. France has placed a good part of the 100,000 tons recently pending, paying 2.35c. to two important companies, and has been negotiating for 15,000 tons additional. Probably 200,000 tons more is involved in estimates now before the trade.

There is a more general establishment of 1.35c. Pittsburgh on plates and shapes. The Eastern market shows special firmness in plates and as high as 1.40c., Pittsburgh, has been paid. Shipyard work is accumulating, four tank steamers having been let in the week. Chicago district prices have dragged, but are now higher and with the exception of one important company, bars and structural shapes are selling there at 1.35c., Pittsburgh, and plates at 1.30c.

The demand for wire products from Europe rather than at home has caused an advance of $1 a ton on nails and $2 on plain wire, while the readjustment in galvanized wire has brought it down $2 a ton. Nails are now $1.65 per keg and plain wire $1.50 per 100 lb.

It is becoming more evident that the railroads in their later buying for this year will have to compete for mill capacity with the buyers of munitions. Few rails can now be had for early delivery. In the past week 30,000 tons was placed, of which 15,000 tons, which goes to Alabama, cannot be delivered before October. At Chicago a Western road has bought 11,000 tons of tie plates, and the price there has advanced from $27 to $28. Russia is inquiring for 50,000 tons more of rails and may place the order in Canada.

It is estimated that 20 per cent of the finished and semi-finished steel booked by leading interests in the Chicago district in the past month is for direct export and that as much more may go into products that will be exported. One order is for 1700 tons of special bolts for Russia.

Pig iron prices have advanced in all markets 25 to 50 cents a ton. At Buffalo after two weeks of rather active buying, much of it for delivery in the first half of 1916, makers have put up their prices from $14 to $14.50 for that delivery and some have declined to take further 1916 business now. In other districts purchases for next year are the exception. August buying for the following year is unusual and the high prices asked for next year have had the effect of keeping some buyers out of the market while making others more anxious to cover. Some pig-iron markets report less activity this week, and buyers are evidently not being carried off their feet.

At Chicago Northern iron has advanced less than in other districts and Southern iron at $12 to $12.50, Birmingham, for No. 2 for next year is shut out. There is some offering of speculative Southern iron at $11 to $11.50, Birmingham. While most of the 200,000 to 300,000 tons of such iron will presumably be held for considerably higher prices, there is enough available at lower figures to temper the advance.

Predictions of the Lake Superior iron ore movement in 1915 have been steadily revised upward and are now around 45,000,000 tons. The Steel Corporation's shipments, at first scheduled at 17,000,000 tons, are likely to be 21,000,000 tons or more.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type. Declines in Italics

At date, one week, one month and one year previous

	Aug. 25, 1915.	Aug. 18, 1915.	July 28, 1915.	Aug. 26, 1914.
Pig Iron. Per Gross Ton:				
No. 2 X, Philadelphia	**$15.50**	$15.00	$14.50	$14.75
No. 2, Valley furnace	**14.50**	13.25	12.75	13.00
No. 2 Southern, Cin'ti	13.90	13.90	12.90	13.25
No. 2, Birmingham, Ala	11.00	11.00	10.00	10.00
No. 2, furnace, Chicago*	13.50	13.50	13.00	13.50
Basic, del'd, eastern Pa	15.50	15.50	14.00	14.00
Basic, Valley furnace	**14.50**	14.25	13.00	13.00
Bessemer, Pittsburgh	**16.45**	16.20	15.20	14.90
Malleable Bess., Ch'go*	13.50	13.50	13.00	14.00
Gray forge, Pittsburgh	**14.45**	14.20	13.45	13.65
L. S. charcoal, Chicago	16.25	16.25	15.75	15.75
Billets, etc. Per Gross Ton:				
Bess. billets, Pittsburgh	23.50	23.50	22.00	21.00
O.-h. billets, Pittsburgh	24.00	24.00	22.00	21.00
O.-h. sheet bars, P'gh	24.50	24.50	23.00	22.00
Forging billets, P'gh	29.00	29.00	28.00	26.00
O.-h. billets, Phila	**32.00**	30.00	30.00	23.40
Wire rods, Pittsburgh	**28.00**	27.00	26.00	26.00
Finished Iron and Steel, Per Lb. to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Bess. rails, heavy, at mill	1.25	1.25	1.25	1.25
Iron bars, Philadelphia	1.459	1.459	1.30	1.17½
Iron bars, Pittsburgh	1.30	1.30	1.25	1.20
Iron bars, Chicago	1.25	1.25	1.20	1.07½
Steel bars, Pittsburgh	1.30	1.30	1.25	1.20
Steel bars, New York	**1.519**	1.469	1.469	1.36
Tank plates, Pittsburgh	**1.30**	1.25	1.25	1.20
Tank plates, New York	1.469	1.469	1.369	1.36
Beams, etc., Pittsburgh	1.30	1.30	1.25	1.20
Beams, etc., New York	**1.519**	1.469	1.419	1.36
Skelp, grooved steel, P'gh	**1.30**	1.25	1.25	1.20
Skelp, sheared steel, P'gh	**1.35**	1.30	1.30	1.25
Steel hoops, Pittsburgh	**1.35**	1.30	1.30	1.30

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

	Aug. 25, 1915.	Aug. 18, 1915.	July 28, 1915.	Aug. 26, 1914.
Sheets, Nails and Wire,	Cents.	Cents.	Cents.	Cents.
Per Lb. to Large Buyers:				
Sheets, black, No. 28, P'gh.	**1.90**	1.85	1.75	1.90
Galv. sheets, No. 28, Pgh.	*3.40*	3.60	4.00	2.90
Wire nails, Pittsburgh..	**1.65**	1.60	1.60	1.60
Cut nails, Pittsburgh....	1.60	1.60	1.55	1.60
Fence wire, base, P'gh..	**1.50**	1.40	1.40	1.40
Barb wire, galv., P'gh..	*2.40*	2.50	2.50	2.00
Old Material.				
Per Gross Ton:				
Iron rails, Chicago.....	$12.25	$12.25	$12.25	$12.00
Iron rails, Philadelphia..	**17.00**	16.00	15.50	14.00
Carwheels, Chicago	11.75	11.75	11.50	11.25
Carwheels, Philadelphia..	13.50	13.50	12.50	11.50
Heavy steel scrap, P'gh..	14.00	14.00	13.00	11.25
Heavy steel scrap, Phila.	14.00	14.00	12.50	10.50
Heavy steel scrap, Ch'go.	11.75	11.75	11.25	9.50
No. 1 cast, Pittsburgh...	13.00	13.00	12.25	11.50
No. 1 cast, Philadelphia.	13.50	13.50	12.50	12.00
No. 1 cast, Ch'go (net ton)	**10.00**	9.50	9.50	9.50
Coke, Connellsville,				
Per Net Ton at Oven:				
Furnace coke, prompt....	$1.50	$1.50	$1.60	$1.70
Furnace coke, future....	1.75	1.75	1.75	1.75
Foundry coke, prompt...	2.00	2.00	2.00	2.25
Foundry coke, future....	2.25	2.25	2.25	2.35
Metals.	Cents.	Cents.	Cents.	Cents.
Per Lb. to Large Buyers:				
Lake copper, New York.	19.00	19.00	22.00	13.00
Electrolytic copper, N. Y.	*16.00*	16.75	18.50	12.37½
Spelter, St. Louis.....	**12.25**	11.50	18.00	5.90
Spelter, New York.....	**12.50**	11.75	18.25	6.05
Lead, St. Louis.....	4.35	4.35	5.45	3.72½
Lead, New York.....	4.50	4.50	5.50	3.87½
Tin, New York.....	*33.75*	34.50	36.00	39.00
Antimony, Asiatic, N. Y.	*28.50*	33.50	35.50	16.00
Tin plate, 100-lb. box, P'gh	$3.10	$3.10	$3.10	$3.50

Finished Iron and Steel f. o. b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16.9c.; Philadelphia, 15.9c.; Boston, 18.9c.; Buffalo, 11.6c.; Cleveland, 10.5c.; Cincinnati, 15.8c.; Indianapolis, 17.9c.; Chicago, 18.9c.; St. Louis, 23.6c.; Kansas City, 43.6c.; Omaha, 43.6c.; St. Paul, 22.9c.; Denver, 68.6c.; New Orleans, 30c.; Birmingham, 23c., 45c.; Pacific coast, 80c., on plates, structural shapes and sheets No. 11 and heavier; 85c. on sheets Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes. The foregoing rates to the Pacific coast are by rail. The rate via New York and the Panama Canal has no stability, being dependent on vessel charges.

Plates.—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.30c. base net cash, 30 days. Following are stipulations prescribed by manufacturers:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated Feb. 6, 1903, or equivalent, ¼ in. and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per sq. ft. are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼ in. thick on edge or not less than 11 lb. per sq. ft., to take base price. Plates over 72 in. wide ordered less than 11 lb. per sq. ft. down to the weight of 3-16 in. take the price of 3-16 in.

Allowable overweight, whether plates are ordered to gage or weight to be governed by the standard specifications of the Association of American Steel Manufacturers.

Extras	Cents per lb.
Gages under ¼ in. to and including 3-16 in....	.10
Gages under 3-16 in. to and including No. 8....	.15
Gages under No. 8 to and including No. 9.....	.25
Gages under No. 9 to and including No. 10.....	.30
Gages under No. 10 to and including No. 12....	.40
Sketches (including straight taper plates), 3 ft. and over	.10
Complete circles, 3 ft. in diameter and over....	.20
Boiler and flange steel	.10
"A. B. M. A." and ordinary firebox steel.....	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Widths over 100 in. up to 110 in., inclusive.....	.05
Widths over 110 in. up to 115 in., inclusive.....	.10
Widths over 115 in. up to 120 in., inclusive.....	.15
Widths over 120 in. up to 125 in., inclusive.....	.25
Widths over 125 in. up to 130 in., inclusive.....	.50
Widths over 130 in.	1.00
Cutting to lengths under 3 ft. to 2 ft., inclusive.	.25
Cutting to lengths under 2 ft. to 1 ft., inclusive.	.50
Cutting to lengths under 1 ft.	1.55

No charge for cutting rectangular plates to lengths 3 ft. and over.

Wire Products.—Prices to jobbers, in effect from Aug. 23: Fence wire, Nos. 0 to 9, per 100 lb., terms 60 days or 2 per cent discount in 10 days, carload lots, annealed, $1.50; galvanized, $2.10. Galvanized barb wire and staples, $2.40; painted, $1.80. Wire nails, $1.65. Galvanized nails, 1 in. and longer, $1.50 advance over base price; shorter than 1 in., $2 advance over base price. Woven wire fencing, 71½ per cent off list for carloads; 70½ off for 1000-rod lots; 69½ off for less than 1000-rod lots.

The following table gives the price to retail merchants on fence wire in less than carloads, with the extras added to the base price:

Plain Wire, per 100 lb.

Nos.	0 to 9	10	11	12&12½	13	14	15	16
Annealed	$1.55	$1.60	$1.65	$1.70	$1.80	$1.90	$2.00	$2.10
Galvanized ...	2.35	2.40	2.45	2.50	2.60	2.70	3.00	3.10

Wire Rods.—Bessemer, open-hearth and chain rods, $28.

Structural Material.—I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles 3 to 6 in. on one or both legs, ¼ in. thick and over, and zees, 3 in. and over, 1.30c. Extras on other shapes and sizes are as follows:

	Cents per lb.
I-beams over 15 in.	.10
H-beams over 18 in.	.10
Angles over 6 in., on one or both legs	.10
Angles, 3 in. on one or both legs less than ¼ in. thick, as per steel bar card, Sept. 1, 1909....	.70
Tees, structural sizes (except elevator, handrail, car truck and conductor rail)	.05
Channels and tees, under 3 in. wide, as per steel bar card, Sept. 1, 1909	.20 to .80
Deck beams and bulb angles	.30
Handrail tees	.75
Cutting to lengths under 3 ft., to 2 ft. inclusive.	.25
Cutting to lengths, under 2 ft., to 1 ft. inclusive.	.50
Cutting to lengths, under 1 ft.	1.55

No charge for cutting to lengths 3 ft. and over.

Wrought Pipe.—The following are the jobbers' carload discounts on the Pittsburgh basing card in effect from Aug. 16, 1915, all full weight:

Butt Weld

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
⅛, ¼ and ⅜....	72	46½	⅛ and ¼	64	37
½	76	59½	⅜	64	37
¾ to 3.....	79	63½	½	68	47
			¾ to 2½.....	71	52

Lap Weld

2	76	60½	1½	55	36
2½ to 6.....	78	62½	1½	66	47
7 to 12.....	76	58½	2	67	49
13 and 14.....	62½	..	2½ to 4.....	69	52
15	60	..	4½ to 6.....	69	52
			7 to 12.....	67	50

Reamed and Drifted

1 to 3, butt.....	77	61½	1 to 1½, butt....	69	50
2, lap	74	58½	2, butt	69	50
2½ to 6, lap.....	76	60½	1¼, lap	53	34
			1½, lap	64	45
			2, lap	65	47
			2½ to 4, lap....	67	50

Butt Weld, extra strong, plain ends

⅛, ¼ and ⅜...	67	49½	⅜	61	43
½	72	58½	½	66	51
¾ to 1½.....	76	62½	¾ to 1½.....	70	53
2 to 3.....	77	63½	2 and 2½.....	71	54

Lap Weld, extra strong, plain ends

2	73	57½	1½	65	48
2½ to 4.....	75	59½	2	67	49
4½ to 6.....	74	58½	2½ to 4.....	69	52
7 to 8	68	50½	4½ to 6.....	68	51
9 to 12.....	63	45½	7 to 8.....	61	44
			9 to 12.....	56	39

Butt Weld, double extra strong, plain ends

½	62	48½	½	56	40
¾ to 1½.....	65	51½	¾ to 1½.....	59	43
2 to 2½.....	67	53½	2 and 2½.....	61	45

Lap Weld, double extra strong, plain ends

2	63	49½	2	57	40
2½ to 4.....	65	51½	2½ to 4.....	59	45
4½ to 6.....	64	50½	4½ to 6.....	58	44
7 to 8	58	40½	7 to 8	51	33

To the large jobbing trade an additional 5 per cent is allowed over the above discounts.

The above discounts are subject to the usual variation in weight of 5 per cent. Prices for less than carloads are two (2) points lower basing (higher price) than the above discounts on the black and three (3) points on galvanized.

Boiler Tubes.—Discounts on less than carloads, f.o.b. Pittsburgh, freight to destination added, in effect from July 16, 1915.

Lap Welded Steel		*Standard Charcoal Iron*	
1¾ and 2 in.....	63	1¾ and 2 in.....	50
2¼ in.	60	2¼ in.	47
2½ to 2¾ in.....	66	2½ and 2¾ in.....	54
3 and 3¼ in.....	71	3 and 3¼ in.....	58
3½ and 4½ in.....	72	3½ and 4½ in.....	60
5 and 6 in.....	65	5 and 6 in.....	54
7 to 13 in.....	62		

Locomotive and steamship special charcoal grades bring higher prices.

1¾ in., over 18 ft., 10 per cent net extra.

2 in. and larger, over 22 ft., 10 per cent net extra.

Sheets.—Makers' prices for mill shipment on sheets of U. S. Standard gage, in carload and larger lots, on which jobbers charge the usual advance for small lots from store, are as follows, f.o.b. Pittsburgh, terms 30 days net, or 2 per cent cash discount in 10 days from date of invoice.

Blue Annealed Sheets

	Cents per lb.
Nos. 3 to 8	1.35 to 1.45
Nos. 9 to 10	1.40 to 1.50
Nos. 11 and 12	1.45 to 1.55
Nos. 13 and 14	1.55 to 1.65
Nos. 15 and 16	1.65 to 1.75

Box Annealed Sheets, Cold Rolled

	Cents per lb.
Nos. 10 and 11	1.55
No. 12	1.55
Nos. 13 and 14	1.60
Nos. 15 and 16	1.65
Nos. 17 to 21	1.70
Nos. 22 and 24	1.75
Nos. 25 and 26	1.80
No. 27	1.85
No. 28	1.90
No. 29	1.95
No. 30	2.05

Galvanized Sheets of Black Sheet Gage

	Cents per lb.
Nos. 10 and 11	2.40 to 2.50
No. 12	2.50 to 2.60
Nos. 13 and 14	2.50 to 2.60
Nos. 15 and 16	2.60 to 2.70
Nos. 17 to 21	2.75 to 2.85
Nos. 22 and 24	2.95 to 3.05
Nos. 25 and 26	3.10 to 3.20
No. 27	3.25 to 3.35
No. 28	3.40 to 3.50
No. 29	4.15 to 4.25
No. 30	4.40 to 4.50

Pittsburgh

PITTSBURGH, PA., Aug. 24, 1915.

Conditions in the steel trade continue very active. A strong feature of the situation is that several of the leading steel companies report that, while shipments are very heavy, specifications on some products are coming in at a faster rate than the material is going out, and they are getting further behind on deliveries. Several large contracts for steel rounds have been offered the past week, one for 40,000 tons, but the mills are so well filled they are not in position to take on more contracts for delivery in the near future. The pig-iron market is strong, prices on Bessemer, basic and foundry iron being up about 25c. per ton. Billets and sheet bars are firm, with sales of Bessemer sheet bars at $24, and open-hearth sheet bars at $25 for last quarter. Prices on wire nails and plain wire have been advanced $1 per ton, spikes 5c. per keg and shafting about $1 per ton. Blue annealed and Bessemer box annealed sheets are up $1 per ton, while galvanized sheets are off about $4, due to the continued decline in spelter. There are no regular market prices on galvanized sheets, prices quoted depending largely on the buyer, the quantity wanted and how much the mill has in stock. The foreign demand for barb wire is active and makers are realizing handsome profits on this trade. Prices on the finer grades of tool steel have again advanced, due to the higher market for ferrotungsten, which, it is stated, has sold as high as $3.25 per pound. This means an increased cost of at least 6c. per pound in making the high grade tool steels. Rods are also up about $1 per ton in sympathy with the advance in nails and wire. The scrap market has quieted down, but prices are firm. Coke is dull, with prompt furnace being quoted at $1.50 at oven.

Pig Iron.—While prices are strong, the inquiry has quieted down to some extent on Bessemer and basic, but foundry iron is active. Prices are up 25c. to 50c., with sellers predicting a still higher market. It is claimed that the amount of Bessemer and basic iron available for the market is very limited, and that it is in strong hands. We note a sale of 1500 tons and one of 2500 tons of Bessemer iron at $15.50, Valley; 1000 tons of basic at $14.25; 200 tons of high-silicon foundry iron at $15; 100 tons of ordinary No. 2 at $14.50; 250 tons at $14.50, 2000 tons at $14.50, and 1000 tons for delivery in last quarter of this year and first quarter of next year at $14, Valley furnace. This last price, however, could not be duplicated to-day, as No. 2 foundry is very firm at $14.50, with several sellers asking $15. A sale of 1500 tons of standard Bessemer iron for Italy was made on Monday and the iron was shipped at once by special train to catch a steamer from New York on Thursday. The sale covers 4500 tons, at $15.50, Valley furnace, and all for early shipment. The Westinghouse Electric & Mfg. Company is in the market for 10,000 tons or more foundry for Cleveland for the second and third quarter. We quote: Standard Bessemer iron, $15.50; basic, $14.50; malleable Bessemer, $14; No. 2 foundry, $14.50; gray forge, $13.50, all at Valley furnace, the freight rate for delivery in the Pittsburgh or Cleveland districts being 95c. per ton.

Billets and Sheet Bars.—The steel market is very firm, with sellers predicting still higher prices. One Youngstown mill is reported to have sold several moderate sized lots of Bessemer sheet bars for last quarter delivery at $24, and several lots of open-hearth sheet bars at $25, maker's mill. A local steel concern is back very much in deliveries on its contracts, and has been trying for some days to buy a large quantity of rod billets. We note a sale of 2000 tons of open-hearth sheet bars at $24.50, Youngstown, and 1000 tons of small open-hearth billets at close to $25, Pittsburgh. Should prices of spelter continue to decline, and galvanized sheets get more active, it is believed specifications against contracts for sheet bars would soon be heavier. We quote: Bessemer billets, $23; open-hearth billets, $24; Bessemer sheet bars, $24, and open-hearth sheet bars, $24.50, Youngstown; Bessemer billets, $23 to $23.50; open-hearth billets, $24 to $24.50; Bessemer sheet bars, $24, and open-hearth sheet bars, $24.50, f.o.b., Pittsburgh mills. We quote forging billets at $29 to $30 for sizes up to but not including 10 x 10 in., and for carbons up to 0.25, the regular extras being charged for larger sizes and higher carbons. Forging billets running above 0.25 and up to 0.60 carbon take $1 per ton extra. Axle billets are held at $26.

Ferroalloys.—Reports of sales of 80 per cent English ferromanganese at $125 to $135, f.o.b. New York, are discredited here. Several dealers say they would be glad to obtain $125 for prompt, and would be willing to pay a commission of $10 to $15 a ton on any sales at those prices. There is some surprise in the trade that the new demand is not more urgent, and this is taken to mean that deliveries to consumers are better than generally supposed. One large steel interest in Youngstown, Ohio, states that it is getting deliveries on its ferromanganese contracts very promptly and has enough in its yard to meet its entire needs for the remainder of this year. We quote 80 per cent English ferromanganese in carload lots and up to 100 tons at $100 to $110, seaboard, but note that the new demand is only for small lots for prompt shipment. We quote 50 per cent ferrosilicon in lots up to 100 tons, at $73; over 100 tons to 600 tons, $72, and over 600 tons, $71, delivered in the Pittsburgh district. We quote 10 per cent Bessemer ferrosilicon at $18; 11 per cent, $19; 12 per cent, $20, all f.o.b. cars at furnace Ashland, Ky., Jackson, or New Straitsville, Ohio each of these points having a rate to Pittsburgh of $2 per gross ton. We quote 20 per cent spiegeleisen at $25 at furnace. We quote ferrotitanium at 8c. per lb. in carloads, 10c. in 2000-lb. lots and over, and 12½c. in smaller lots.

Structural Material.—It develops that the order received by the Jones & Laughlin Steel Company for a steel warehouse building for the Pittsburgh & Lake Erie Railroad in this city was for over 8000 tons, instead of 7500 tons, and the contract of the McClintic-Marshall Company for new buildings for the Baldwin Locomotive Works at Eddystone, Pa., is about 7500 tons, making a total of about 18,500 tons in all that it has taken for the new Baldwin works. The Riter-Conley Mfg. Company has taken 6300 tons for the Department of the Interior Building at Washington, D. C., and also 800 tons for a new foundry building for the Erie Malleable Iron Company, Erie, Pa. The John Eichleay, Jr., Company has taken 150 tons for an extension to the Herron Avenue bridge in this city. The new buildings for extensions for the Valley Mold

Iron Company at Sharpsville, Pa., will take 700 to 900 tons of steel, and one of these buildings, about 400 tons, has been placed with the McMyler Interstate Company, Cleveland. Robert W. Hunt & Co., Monongahela Building, Pittsburgh, have an inquiry out for 1,345 tons for steel bridges for railroads for the Chinese Government. Prices are very firm, the Carnegie Steel Company quoting 1.35c. on beams and channels up to 15 in. for delivery over the remainder of the year. We quote beams and channels up to 15 in. at 1.30c. to 1.35c., f.o.b. Pittsburgh.

Plates.—There is very little domestic inquiry for cars, and reports that the Pittsburgh Foreign Trade Commission has an inquiry for 5835 freight and passenger cars for France are not confirmed here. The court having granted permission to the Wheeling & Lake Erie Railroad to sell $2,000,000 worth of receivers' certificates, it is stated that it will soon be in the market for 650 steel drop-end gondolas, 100 standard steel box cars, and 100 steel automobile cars. The Pressed Steel Car Company has taken 25 ore cars for the Atchison, Topeka & Santa Fe, and the Greenville Steel Car Company, Greenville, Pa., has taken 200 steel hoppers for the Baltimore & Ohio. The Pressed Steel Car Company is now turning out the order for cars for Russia which it took some time ago for 60 flat cars, 5000 gondolas and 2000 box cars. It is finishing the flat cars, and will start about Sept. 1 on the gondolas. As soon as these are finished, the box cars will be built. The current demand for plates is heavy and the local market is strong, the Carnegie Steel Company quoting 1.35c. for delivery over the remainder of the year. The minimum price now seems to be 1.30c., and we therefore quote ¼ in. and heavier plates at 1.30c. to 1.35c., f.o.b. Pittsburgh. On a very desirable specification it is possible that one or two mills might sell at 1.25c., but this price has practically disappeared.

Steel Rails.—Domestic demand for standard sections is only for occasional small lots for prompt shipment. The new rail mill being built by the Carnegie Steel Company at the Edgar Thomson works, which will be completed late this year, will be able to roll sections up to 150 lb. The new demand for light rails is active, the Carnegie Company having received new orders and specifications in the past week for 3650 tons. We quote standard section rails of Bessemer stock at 1.25c., and of open-hearth, 1.34c., f.o.b. Pittsburgh. We quote light rails as follows, in carload lots: 8 and 10-lb. sections, 1.275c.; 12 and 14-lb., 1.225c.; 16 and 20-lb., 1.175c.; 25, 30, 35, 40, and 45-lb. sections, 1.125c. The prices of light rails are materially shaded on large lots.

Tin Plate.—An inquiry is out from the Standard Oil Company for 200,000 boxes or more of coke plates to be made into oil cans. There are only two sizes in the inquiry, 14 x 18¾ in. to be used in making the sides, and 10 x 20 in. for the tops and bottoms. Deliveries run into first quarter or first half of 1916, and for this reason several local makers have quoted relatively higher prices, due to the uncertainty of the market on pig tin and steel in the early part of next year. There is still some foreign inquiry for tin plate, but mostly for lots ranging from 2000 to 5000 boxes. One recent inquiry from England was for about 25,000 boxes. Specifications are only fair, but local mills have work ahead for four or five weeks. The larger plants are running to about 100 per cent, the American Sheet & Tin Plate Company operating this week to 94 per cent. On small domestic orders, we quote 14 x 20 coke plates at $3.10 to $3.20 per base box, f.o.b. Pittsburgh, depending on the order.

Sheets.—Effective Tuesday, Aug. 24, the leading makers of sheets advanced prices on No. 28 Bessemer black to 1.90c. Prices on blue annealed were also advanced to 1.40c. minimum for Nos. 9 and 10. Galvanized sheets have further declined, being offered as low as 3.40c. for No. 28. The demand for black and blue annealed sheets is fairly heavy, but there is very little buying in galvanized sheets, and they will continue quiet until prices become settled. Operations among leading sheet mills range from 70 to about 90 per cent. We quote No. 28 galvanized sheets at 3.40c. to 3.60c.; No. 28 Bessemer black sheets, 1.90c.; Nos. 9 and 10 blue annealed sheets, 1.40c. to 1.50c.; No. 30 black plate, tin-mill sizes, H. R. & A. 1.85c.; 22, 1.90c.; Nos. 27, 26 and 25, 1.85c.; Nos. 22 to 24, 1.80c.; Nos. 17 to 21, 1.75c.; Nos. 15 and 16, 1.70c. The above prices are for carload lots, f.o.b. at maker's mill, jobbers charging the usual advances for small lots from store.

Wire Rods.—The advance of $1 per ton in prices of wire nails and plain wire is reflected in rods, which have gone up about the same figure and are scarce. Local makers have little to spare for the outside trade, as they are running their wire mills full and using the greater part of their rod output. Specifications against contracts are active and there is a fair foreign demand. One inquiry recently was for 2000 tons for shipment to England. Higher prices are being obtained for export rods than for domestic. We quote Bessemer, open-hearth and chain rods at $28, f.o.b. Pittsburgh.

Wire Products.—Effective Monday, Aug. 23, prices on wire nails and wire were advanced, but the extras for galvanizing were reduced. There are still a number of contracts on mill books at $1.55 for nails, but these are being rapidly cleaned up and the amount of new buying at the $1.60 price was light. It is claimed the wire nail mills have less business on their books than usual when an advance in prices is made. The foreign demand for barb wire is heavy, and shipments abroad are being made regularly by local makers. Prices to the large trade, effective from Aug. 23, are as follows: Wire nails, $1.65; galvanized nails 1 in. and longer taking an advance over this price of $1.50, and shorter than 1 in. $2. Plain annealed wire is $1.50; galvanized barb wire and fence staples, $2.40, painted barb wire, $1.80; polished fence staples, $1.80, all f.o.b. Pittsburgh, with freight added to point of delivery, terms sixty days net, less 2 per cent off for cash in ten days. Prices on woven wire fencing are 71½ per cent off in carload lots, 70½ per cent on 1000-rod lots, and 69½ per cent on small lots, f.o.b. Pittsburgh.

Cold-Rolled Strip Steel.—While consumers are pretty well covered for the remainder of the year, new demand is fairly active, prices are firm and specifications against contracts active. Foreign demand is good, and regular shipments of cold-rolled steel are being made abroad by local makers. We quote hard-rolled steel, 1½-in. and wider, under 0.20 carbon, sheared or natural mill edge, per 100 lb., $2.85 to $2.95, delivered. Extras, which are standard among all mills, are as follows:

Thickness, in.	Extras for thickness	Extras for soft or intermediate tempers	Extras for straightening and cutting to lengths not less than 24 in.
0.100 and heavier	Base	$0.25	$0.10
0.099 to 0.050	$0.05	0.25	0.15
0.049 to 0.035	0.20	0.25	0.15
0.034 to 0.031	0.35	0.40	0.25
0.030 to 0.025	0.45	0.40	0.40
0.024 to 0.020	0.55	0.40	0.50
0.019 to 0.017	0.85	0.50	1.10
0.016 to 0.015	1.25	0.50	1.10
0.014 to 0.013	1.95	0.50	1.25
0.012	2.30	0.50	coils only
0.011	2.65	0.50	coils only
0.010	3.00	0.50	coils only

Skelp.—The demand is fairly active and prices are slightly higher, due to the advance in raw materials. We now quote grooved steel skelp at 1.30c. to 1.35c.; sheared steel skelp, 1.35c. to 1.40c.; grooved iron skelp, 1.70c. to 1.75c., and sheared iron skelp, 1.80c. to 1.85c., delivered to consumers' mills in the Pittsburgh district.

Railroad Spikes.—On account of the higher prices of steel, but not due to the heavy demand, makers of spikes have advanced prices 5c. per keg. As yet none of the order for Russia for 75,000 to 100,000 kegs has come to local makers. Several have made up some sample lots of the type of spikes called for, known as dog head or dog eared, but they have not met the full requirements of the buyers, and other lots will be made up to conform to the Russian specifications. It is said part of the Russian order has been placed in Chicago and part in Lebanon, Pa. We now quote standard sizes of railroad spikes at $1.50, and small railroad and boat spikes at $1.60 per 100 lb., f.o.b. Pittsburgh.

Rivets.—The demand for boiler and structural rivets is heavier than for a long time. Local makers are filled up with orders for several months ahead and are shipping large lots of rivets abroad. Prices are firm and likely to be higher. We quote buttonhead structural rivets at $1.60 and conehead boiler rivets at $1.70 per 100 lb., f.o.b. Pittsburgh, small lots bringing about 10c. advance.

Hoops, Bands and Cotton Ties.—While the new demand is fairly active, most consumers are covered for the remainder of the year, specifying freely against contracts. Two local makers state that their output of hoops and bands is sold for two to three months ahead. Very little is doing in cotton ties, the season being about over. The Carnegie Steel Company is now quoting 1.35c. minimum on bands and 1.40c. on hoops, but other makers have not come up to that level. We quote steel hoops at 1.30c. to 1.40c. and bands at 1.30c. to 1.35c., for delivery over the remainder of the year. Cotton ties are quoted at 85½c. per bundle for August.

Iron and Steel Bars.—Steel bars continue in heavy demand. Two large inquiries are out for 3¼-in. rounds, one of which may be taken by a local maker. Specifications against contracts are active, and the steel-bar mills are filled up for practically the remainder of this year. One Eastern steel mill is stated to have orders on its books for close to 140,000 tons of rounds, on which a very large profit is being made. On some sizes of steel bars, mills are back in deliveries four to six weeks and are getting further behind. The demand for steel bars for reinforcing purposes and for common iron bars is more active. The Carnegie Steel Company and Republic Iron & Steel Company are quoting 1.35c. minimum on steel bars. We quote steel bars at 1.30c. to 1.35c. for third quarter; common iron bars, 1.30c.; refined iron bars, 1.35c. to 1.40c., and railroad test iron bars, 1.40c. to 1.45c., f.o.b. Pittsburgh.

Nuts and Bolts.—Local makers report they are being snowed under with business and are compelled to turn down foreign orders on which they cannot make the deliveries wanted. Two have refused to quote on a foreign inquiry for about 1000 tons of bolts for delivery over the next two or three months, as their capacity is sold up. Fairly heavy shipments are being made abroad, but these are getting smaller as the domestic demand expands. Prices are firm, but no higher. Discounts on nuts and rivets to the large trade are as follows:

U. S. S. Cold Punched Blank and Tapped, Unchamfered, Trimmed and Reamed

½ in. and smaller, hex.....7.4c. per lb. off
⅝ in. and larger, hex.....6.9c. per lb. off
Square, all sizes .....5.5c. per lb. off

Semi-Finished Tapped

½ in. and smaller, hex.....85-10-5 off
⅝ in. and larger, hex.....85-5 off

Black Bulk Rivets

7/16 x 6½, smaller and shorter.....80-10 off

Package Rivets 1000 *Pcs.*

Black, metallic tinned and tin plated....75-10-10 off

Discounts on bolts to the large trade, are as follows:

Machine bolts, h. p. nuts, ⅜ x 4 in., smaller and shorter, rolled, 75, 10, 10 & 10; smaller and shorter, cut, 75, 10, 10 & 5; larger or longer, 75 & 10. Machine bolts, C. P. C. & T. nuts, ⅜ x 4 in., smaller and shorter, 75, 10 & 7½; larger or longer, 70, 10 & 7½. Common carriage bolts, ⅜ x 6 in., smaller and shorter, rolled, 75, 10, 10 & 5; smaller and shorter, cut, 75, 10 & 10; larger or longer, 75 & 5. Bolts without nuts, 6 in. and shorter, extra 10; longer lengths, extra, 5. Blank bolts, 75 & 10. Bolt ends with h. p. nuts, 75 & 10; C. P. C. & T. nuts, 70, 10 & 7½. Gimlet point coach screws and cone point lag screws, 80 & 15. Nuts, blank or tapped, h. p. square, 6c. lb. off; h. p. hexagon, 6.70c. lb. off; C. P. C. & T. square, 5.50c. lb. off; hexagon, ⅝ in. and up, 7c. lb. off; smaller, 7.50c. lb. off; C. P. plain, square, 5.40c. lb. off; hexagon, 5.80c. lb. off; C. P. semi-finished, hexagon, ⅝ in and up, 85 & 10; smaller, 85, 10 & 10.

Shafting.—Due to the higher costs of steel bars, makers of shafting have lowered discounts one point, equal to an advance of about $1 per ton. The new demand from the automobile trade and from screw stock users is heavy, but from implement makers is light. Nearly all consumers of shafting are covered for the remainder of the year on contracts placed some time ago when prices were lower, and specifications are active. On new orders, discounts on cold-rolled shafting, effective from Monday, Aug. 23, are 64 per cent off in carload lots and 59 per cent in less than carloads, f.o.b. Pittsburgh.

Merchant Steel.—The demand is active and prices are firm. Shipments by the mills are heavy and most consumers are pretty well covered over remainder of this year. On small lots we quote: Iron finished tire, ½ x 1½ in. and larger, 1.60c. base; under ½ x 1½ in., 1.75c.; planished tire, 1.80c.; channel tire, ¾ to 1 and 1 in., 2.10c. to 2.20c.; 1 x ⅛ in. and larger, 2.20c.; toe calk, 2.20c. to 2.30c. base; flat sleigh shoe, 1.95c.; concave and convex, 2c.; cutter shoe, tapered or bent, 2.50c. to 2.60c.; spring steel, 2.20c. to 2.30c.; machinery steel, smooth finish, 2c.

Wrought Pipe.—Prices on crude oil have been advancing lately, and it is believed this will stimulate drilling operations. Pennsylvania oil has been put up 10c. per barrel twice, or from $1.35 to $1.55, and Oklahoma oil, which sold some time ago as low as 40c., is now 75c. The new demand for merchant pipe is only fair, and for galvanized is dull, jobbers and consumers evidently believing that if spelter continues to decline the prices of galvanized pipe will be lower. Stocks carried by jobbers are fairly heavy. The new demand for oil country goods is dull and has been for some months. Discounts on black iron and steel pipe are well held, but on galvanized are being more or less shaded.

Boiler Tubes.—Nearly all large consumers are covered for the remainder of this year, and new demand is only for small lots. Discounts on both locomotive and merchant tubes are more or less shaded.

Old Material.—Inquiry has quieted down, but prices are very firm. Leading consumers bought quite heavily in the past two or three weeks, but now that dealers are quoting $14.50 to $15 on heavy steel scrap and high prices on other grades, buyers are inclined to hold off to see whether the advances are going to be maintained. Several large consumers have asked dealers to hold up shipments until they are able to work off some of their accumulation. We note a sale of 2000 tons of bundled sheet scrap at $12 per gross ton delivered to consumer's mill in the Wheeling district, and 200 tons of turnings at $8.75, delivered. Dealers quote for delivery in the Pittsburgh and nearby districts that take the same rates of freight, as follows, per gross ton:

Heavy steel melting scrap, Steubenville, Follansbee, Brackenridge, Sharon, Monessen, Midland and Pittsburgh delivery	$14.00 to $14.50
Compressed side and end sheet scrap	13.00 to 13.25
No. 1 foundry cast	13.00 to 13.25
Bundled sheet scrap, f.o.b. consumers' mills, Pittsburgh district	11.75 to 12.00
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., and Franklin, Pa.	14.25 to 14.50
No. 1 railroad malleable stock	12.25 to 12.50
Railroad grate bars	8.75 to 9.00
Low phosphorus melting stock	17.25 to 17.50
Iron car axles	18.50 to 19.00
Steel car axles	16.00 to 16.50
Locomotive axles, steel	19.75 to 20.25
No. 1 busheling scrap	11.75 to 12.00
No. 2 busheling scrap	8.75 to 9.00
Machine shop turnings	8.75 to 9.00
Old carwheels	13.00 to 13.50
Cast-iron borings	9.50 to 9.75
*Sheet bar crop ends	13.50 to 14.00
Old iron rails	12.75 to 13.00
No. 1 railroad wrought scrap	13.00 to 13.25
Heavy steel axle turnings	10.25 to 10.50
Heavy breakable cast scrap	12.50 to 12.75

*Shipping point.

Coke.—This is about the only material that has not shown some betterment in demand or improvement in prices in sympathy with steel products. The demand for blast-furnace coke is dull and there are no inquiries out for delivery over the remainder of the year. We quote standard makes of blast-furnace coke at $1.50 to $1.60 for prompt shipment, and $1.75 to $1.85 on contracts for the remainder of the year; standard makes of 72-hr. foundry coke, $2 to $2.25 for prompt delivery and $2.25 to $2.50 on contracts for remainder of the year, all per net ton at oven. The Connellsville *Courier* reports the output of coke in the upper and lower Connellsville regions for the week ended Aug. 14 as 374,413 net tons, an increase over the previous week of 7573 tons.

Chicago

CHICAGO, Aug. 25, 1915.—(*By Wire.*)

The profits to consumers in existing contracts at 1.20c. Pittsburgh, and lower, for shapes, bars and plates, is enhanced with each advance in price by the mills, and it is scarcely necessary to look farther for an explanation of current heavy specifications and the relatively moderate flow of new business. With one important exception, bars and shapes are on the basis of 1.35c., Pittsburgh, with plates at 1.30c. Prices have also been advanced on tie plates, blue annealed and black sheets, hard steel bars and wire, while store quotations for plates, shapes, bars and sheets are up from $1 to $2 per ton. The booking of specifications by the mills is continually in excess of shipments, and, except where orders for limited quantities can be absorbed in scheduled rollings, delivery prior to October or November is the exception. The Russian order for railroad material to be filled here covers 40,000 tons of rails and about 10,000 tons of fastenings. A Western railroad has bought 11,000 tons of tie plates. New projects calling for structural steel are limited, and the local situation with respect to volume and prices of fabricated work compares unfavorably with the reports of average conditions for the past month throughout the country. It is interesting to note, despite the unfavorable location of this market for export shipment, that approximately 20 per cent of finished and semi-finished steel booked within the last month is for direct export, while it may be assumed that as much more will go indirectly. An order for 1700 tons of special bolts for Russia placed here is a significant indication of conditions. The greatly reduced price of spelter has brought galvanized sheets within the range of normal quotations, and increased business is the result. Deliveries of blue annealed sheets are generally at least six weeks in arrears, while box annealed sheets have been advanced sympathetically. The scrap markets show a decidedly strong situation, but there are some evidences that consumers are, for the time being, fairly well covered. Advances in pig-iron prices are supported by buying of moderately impressive proportions.

Cast-Iron Pipe.—Prices were taken at Cleveland last week on 1200 tons of pipe and at Minneapolis bids will be received this week on 1100 tons. The proposed purchase of 200 tons at Wittenberg, Wis., is the only other municipal business of importance. Prices are strengthening in sympathy with recent advances in pig iron. We quote as follows, per net ton, Chicago: Water pipe, 4 in., $26; 6 to 12 in., $24; 16 in. and up, $23.50, with $1 extra for class A water pipe and gas pipe.

Pig Iron.—There is perhaps an aggregate of 20,000 tons of foundry and malleable iron under consideration in this market for immediate placing. Making up this business are several lots of 1000, 1500 and 2000 tons. Except for the larger transactions in basic, the outlook for the coming week involves a continuance of buying at about the rate that has prevailed for a fortnight. Purchases are being made with deliveries to begin this year and continue through first quarter and first half, which fact draws attention to the unusually early buying of first half iron. Purchases for first half, made as early as Aug. 1, are not altogether an accurate criterion from which to judge the strength of the situation. It can hardly be doubted also that at the present rate of consumption considerable iron contracted for delivery in this year will carry over into the first quarter. In Chicago the foundries are melting at a rate much below normal, but conditions in the outlying districts are decidedly more favorable. In competition, Northern iron at from $13.50 to $14 for the fourth quarter and $14 for first quarter has a marked advantage over Southern iron, for which the minimum price is close to $11.50, Birmingham. For next year the leading Southern selling interests are asking from $12 to $12.50. The most obvious benefit thus far apparent as the result of advancing pig-iron prices has been the cleaning up of past due iron orders and it is the common report that current shipments are decidedly satisfactory. The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable Bessemer and basic iron, which are f.o.b. furnace, and do not include a switching charge averaging 50c. a ton:

Lake Superior charcoal, Nos. 2 to 5	$16.25 to $16.75
Lake Superior charcoal, No. 1	16.75
Lake Superior charcoal, No. 6 and Scotch	17.25
Northern coke foundry, No. 1	14.00 to 14.50
Northern coke foundry, No. 2	13.50 to 14.00
Northern coke foundry, No. 3	13.25 to 13.50
Southern coke, No. 1 f'dry and 1 soft	15.50 to 16.00
Southern coke, No. 2 f'dry and 2 soft	15.00 to 15.50
Malleable Bessemer	13.50 to 14.00
Standard Bessemer	17.25
Basic	13.25 to 13.75
Low phosphorus	20.00 to 20.50
Silvery, 8 per cent	19.00 to 19.25
Silvery, 10 per cent	19.50 to 19.75

(*By Mail*)

Rails and Track Supplies.—The price of tie plates has been advanced to the base of $28 at mill, following the sale of 11,000 tons, last week, to a Western railroad at $27 a ton. The Russian order, which covered 40,000 tons of rails and about 10,000 tons of fastenings, also included 1500 tons of tie plates. Sales of spikes are reported at 1.65c., and quotations for both spikes and track bolts are decidedly firm. Except for small lots of no importance, domestic rail purchases are negligible. We quote standard railroad spikes at 1.60c. to 1.65c., base; track bolts with square nuts, 2c. to 2.10c., base, all in carload lots, Chicago; tie plates, $28, f.o.b. mill, net ton; standard section Bessemer rails, Chicago, 1.25c., base, open-hearth, 1.34c.; light rails, 25 to 45 lb., 1.07c.; 16 to 20 lb., 1.12c.; 12 lb., 1.17c.; 8 lb., 1.22c.; angle bars, 1.50c., Chicago.

Structural Material.—While the new tonnage coming in, in the form of contracts, is above rather than below expectations, there is a noticeable absence of architectural or car building projects. The Santa Fe is asking prices on 500 stock cars, while the purchase of 500 cars by the Michigan Central, as reported last week, leaves 1000 still to be bought by the New York Central. The Mount Vernon Car Company took the Atlantic Coast Line order for 750 cars and the American Car & Foundry Company 200 for the Nashville, Chattanooga & St. Louis. Most of the local fabricators have a large proportion of their capacity unoccupied, the situation apparently being much less favorable than is suggested by general report of fabricating and bridge shops. Complaint, likewise, is still very general with respect to prices. Structural lettings aggregated about 3000 tons of which the larger portion is for Pacific Coast construction. The Wisconsin Bridge & Iron Company took 560 tons for Vandalia Railroad bridges. Mill conditions affecting the delivery of steel are increasingly unfavorable to the buyer, and prices might easily be at a minimum of 1.35c., Pittsburgh, were it not for the unwillingness of some of the Western mills to establish prices on too high a level. We quote for Chicago delivery of plain material from mill 1.489c., to 1.539c.

The price of structural steel out of stock has been advanced $1 per ton, and we quote for Chicago delivery from store 1.85c.

Plates.—Specifications for plates are running about 75 per cent of those for bars, and but little more favorably as compared with structural shapes. The market offers very little of special interest, and prices are still at least $1 per ton below the market for allied lines. We quote for Chicago delivery of plates from mill 1.439c. to 1.489c.

We quote for Chicago delivery of plates out of stock 1.85c., store prices having been advanced $1 per ton.

Sheets.—The decidedly easier market for spelter and the desire on the part of the mills to care for their operating organizations have brought about a freer booking of galvanized sheets. Quotations as low as 3.45c., Pittsburgh, for heavy gages are noted, while one of the mills which has been out of the market for a long time now quotes 3.60c. for No. 28. Relatively better prices are obtainable on the heavier weights of sheets. Activity in blue annealed has been sufficient to build up a considerable back log, and an advance to the basis of 1.45c., Pittsburgh, is announced. Box annealed sheets have also moved up $1 per ton, but this

is due not so much to a demand for sheets as to the value of semi-finished steel. We quote for Chicago delivery from mill, No. 10 blue annealed, 1.589c. to 1.639c.; No. 28 black, 1.989c. to 2.039c.; No. 28 galvanized, 4.689c. to 4.789c.

Store prices for sheets have been adjusted to recent conditions and we quote for Chicago delivery from jobbers' stock as follows, minimum prices applying on bundles of 25 or more: No. 10 blue annealed, 2.05c.; No. 28 black, 2.55c. to 2.65c.; No. 28 galvanized, 4.35c.

Bars.—The development of the market still has its peak in the heavy tonnage specifications for steel bars and the promiscuous inquiry which is surmounting all normal limitations of distribution. Implement specifications are noticeably liberal, and from other directions the demand is sufficiently insistent to make even the moderately retarded deliveries an occasion for complaint. Hard steel bar prices indicate a minimum of 1.30c., with an additional dollar asked for less attractive business. Bar iron is firm at 1.25c. We quote for mill shipment as follows: Bar iron, 1.25c.; soft steel bars, 1.539c.; hard steel bars, 1.30c. to 1.35c.; shafting, in carloads, 65 per cent off; less than carloads, 60 per cent off.

We quote store prices for Chicago delivery: Soft steel bars, 1.75c.; bar iron, 1.75c.; reinforcing bars, 1.75c. base, with 5c. extra for twisting in sizes ½ in. and over and usual card extras for smaller sizes; shafting 55 per cent off.

Rivets and Bolts.—To the low-price contracts for steel and iron bars, particularly the latter, still effective, may be attributed much of the irregularity in bolt and nut prices which persists in this market. Improvement, due to heavier bookings, reasonably good specifications and some new business, is reported, but the general level of prices falls below that of other markets. An interesting transaction of the week was the taking of an order for about 1700 tons of bolts at Chicago for export to Russia. Local makers of rivets are not pushing sales because of the relatively unattractive price now current, but for rivets, ½ in. and smaller, unusually liberal discounts from list are being made. We quote as follows: Carriage bolts up to ⅜ x 6 in., rolled thread, 80-10; cut thread, 80-5; larger sizes, 75-15; machine bolts up to ⅜ x 4 in., rolled thread, with hot pressed square nuts, 80-15; cut thread, 80-10; larger sizes, 80; gimlet point coach screws, 85; hot pressed nuts, square, $6 off per cwt.; hexagon, $7 off per cwt. Structural rivets, ¾ to 1¼ in., 1.75c., base, Chicago, in carload lots; boiler rivets, 10c. additional.

We quote out of store: Structural rivets, 1.95c.; boiler rivets, 2.05c.; machine bolts up to ¾ x 4 in., 75-15; larger sizes, 70-10-10; carriage bolts up to ¾ x 6 in., 75-10; larger sizes, 70-15 off; hot pressed nuts, square, $6, and hexagon, $6.70 off per cwt.

Wire Products.—Adjustments in the prices of wire are announced this week, affecting nails, barb wire, staples and galvanized wire. Suggestion is also made of the probability of an advance in plain wire. The extra for galvanized over plain wire has been reduced from 80c. to 60c. We have revised our quotations and quote to jobbers, per 100 lb., as follows: Plain wire, No. 9 and coarser, base, $1.689; wire nails, $1.839; painted barb wire, $1.989; galvanized barb wire, $2.589; polished staples, $1.989; galvanized staples, $2.589, all Chicago.

Old Material.—The rapid and, in many respects, disproportionate advance in old material prices which centered about the exceptional demand for steel scrap appears to have reached a climax at the end of last week, and a slight check in the rate at which offerings were being absorbed made itself felt. Whatever halting there may be would seem to be attributable, not so much to any change in the general conditions which occasioned the advance thus far, but rather to a temporary supplying of current demand through the filling of recent orders. Some mills which have been taking in scrap freely now find themselves comfortably protected and appear willing to further increase their stocks only when it can be done at an advantageous price. A heavy tonnage of scrap is being melted, however, and new demands have developed, including the purchase of 10,000 tons of steel scrap for the Duluth plant of the Steel Corporation, to be started this fall. Anticipations of continuous buying of scrap for Duluth are being built up as they were in connection with the Gary plant. There is little justification for this hope. At the beginning of operations there is a need of some scrap with which to get under way, but it is the expectation that constituent company scrap and what will be made within the plant will suffice for all ordinary requirements, and the operating policy is designed with that end in view. Reference to the exceptional demand for No. 2 busheling, made in the report of last week, should have read No. 1 rather than No. 2, as published. Similarly, the demand for steel axles is still unsatisfied, and offers of $15 and $15.50 are going round. The price of pipes and flues is also unusually high, this material being cut up and absorbed in shoveling steel consignments. Of rerolling rails there appears to be a scarcity, and a sharp advance in quotations is noted. The principal offerings of railroad scrap include 2200 tons from the St. Paul and 4700 tons from the Rock Island. We have revised our prices and quote for delivery at buyer's works, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton

Old iron rails	$12.25 to $12.50
Relaying rails	19.50 to 20.50
Old carwheels	11.75 to 12.00
Old steel rails, rerolling	13.50 to 14.00
Old steel rails, less than 3 ft.	12.25 to 12.75
Heavy melting steel scrap	11.75 to 12.25
Frogs, switches and guards, cut apart	11.75 to 12.25
Shoveling steel	11.50 to 12.00
Steel axle turnings	8.75 to 9.00

Per Net Ton

Iron angles and splice bars	$13.50 to $13.75
Iron arch bars and transoms	13.75 to 14.25
Steel angle bars	10.75 to 11.25
Iron car axles	15.50 to 16.00
Steel car axles	14.75 to 15.25
No. 1 railroad wrought	11.00 to 11.50
No. 2 railroad wrought	10.50 to 10.75
Cut forge	10.50 to 10.75
No. 1 busheling	9.25 to 9.75
No. 2 busheling	7.75 to 8.25
Pipes and flues	8.75 to 9.25
Steel knuckles and couplers	10.75 to 11.25
Steel springs	10.75 to 11.25
No. 1 boilers, cut to sheets and rings	8.25 to 8.50
Boiler punchings	10.00 to 10.50
Locomotive tires, smooth	11.00 to 11.50
Machine shop turnings	6.75 to 7.00
Cast borings	6.00 to 6.50
No. 1 cast scrap	10.00 to 10.50
Stove plate and light cast scrap	9.00 to 9.25
Grate bars	8.50 to 8.75
Railroad malleable	10.50 to 11.00
Agricultural malleable	9.00 to 9.50

Philadelphia

PHILADELPHIA, PA., Aug. 24, 1915.

The steel market presents some puzzling features, and manufacturers are not without uneasiness over the possibilities. First of all is the high price of semi-finished steel, rerolling billets quoted at $32 and upward and difficult to find. With steel selling at this figure, and shrapnel rounds selling at about 3c. per lb., there is not much encouragement to roll plates, shapes and bars, even at the advanced prices of the latter. Manufacturers do not want a runaway market and are proceeding conservatively. Next is the possibility of the railroads coming into the market and the consequent question, where will they get material and at what price? Several of the railroads have made it known that they are closely watching the situation, and while this does not mean that they may become active, it excites speculation on that point. They are waking up to the fact that they are losing the market. Plates, shapes and bars are quoted strong at 1.509c., Philadelphia, or on the basis of 1.35c., Pittsburgh, and in some instances and for some deliveries higher prices are obtained. The makers of all steel products are filled to capacity. Billets are scarce, and Western steel has been placed here at high prices in which there is considerable variance. Pig iron is strong at higher levels and fairly active. The actual prices of steel-making iron are uncertain in the absence of determining sales, but the quoted prices are higher. The Pennsylvania Railroad sought to double its order and

did so, as far as it could. Scrap is scarce and its prices have advanced.

Pig Iron.—Steadily advancing prices continue to bring consumers into the market and a fairly large volume of business has been handled in the week. There is a distinct betterment in the buying of foundry iron, despite the fact that Pennsylvania jobbing foundries are not melting as much as those in other territories, notably New England. All quotations are subject to immediate acceptance, as buyers who procrastinate are finding to their sorrow. The Pennsylvania Railroad not only placed orders against its inquiry for 4000 tons, last quarter delivery, but, wherever it could, doubled its orders at the prices submitted. For instance, it took 1400 tons of charcoal iron, instead of 700 tons, at $15.75, Buffalo. In some cases sellers would not agree to the proposition, and new and higher quotations were named for the extra iron, which are now under consideration. Another railroad has made tentative inquiry for its first half needs. One brand of eastern Pennsylvania No. 2 foundry iron is quoted at $15 at furnace, and at about $15.80, prompt delivery here, but the producer will not sell into next year, except at an advance of $1.50 per ton. Others are asking all the way from $15.68 to $16 delivered, but there is little to be had at the lower price, an odd figure which is due to the freight rate. One seller quotes $15.90 delivered on prompt deliveries of No. 2 X. Buffalo iron was quoted at $14 at furnace, for the first half, until last Friday, when it was advanced to $14.50, and sales for 1916 delivery were restricted to first quarter. In this case deliveries here take a freight rate of $2.58. On the basis of $14, 1400 tons was sold for local delivery. Buying for 1916 has not been as heavy hereabout as it has been elsewhere, and with all the activity there have been few large transactions. Pipe iron has been sold at $15. Following the lead of its competitors, a Virginia furnace has advanced its quotations 25c. on all grades, but is not seeking to book any orders beyond this year. Just where the price of basic stands is a question. The last sale made was at $15.50, but that is not the market to-day, and it is doubtful if $16 would be accepted. As a matter of fact, up to $18 has been mentioned as a possibility. A large inquiry is expected to develop in the very near future. Business in standard low phosphorus at $23, delivered, has been declined, and sellers are asking $23.25 to $24, or higher. Lebanon low phosphorus has been sold at $18.50 at furnace, though $18 is nearer the average price. Quotations for standard brands, delivered in buyers' yards, shipment ranging from third quarter to last half, range about as follows:

Eastern Penna., No. 2 X foundry	$15.50 to $16.00
Eastern Penna., No. 2 plain	15.25 to 15.75
Virginia, No. 2 X foundry	15.50 to 16.25
Virginia, No. 2 plain	15.25 to 15.50
Gray forge	15.00 ....
Basic	.... 15.50
Standard low phosphorus	23.00 to 23.50

Iron Ore.—Arrivals of foreign ore at this port in the week ended August 21 consisted of 7400 tons from Chile and 9963 tons from Sweden.

Ferroalloys.—The situation is unchanged, with $100, seaboard, the nominal asking price for 80 per cent ferromanganese. A local representative of an English producer has been advised that a shipment is due early in September, but he does not know how many tons. Consumers are eager to get shipments against their contracts. For 50 per cent ferrosilicon quotations range from $73 to $75, Pittsburgh, according to quantity.

Rails.—No new rail business is reported. An order for 2500 tons of track bolts for export to Russia was closed last week.

Bars.—Specifications of ordinary steel bars, as well as of specialties, have been good and the price is firm at 1.509c., Philadelphia. About 3c. is asked for shrapnel rounds, for 17,500 tons of which the Baldwin Locomotive Works is seeking to contract. The International Steam Pump Company is reported to be inquiring for 10,000 tons. Iron bars are quoted at 1.459c. to 1.509c., Philadelphia.

Plates.—With one of the leading local mills, orders are running ahead of output, and deliveries continue to be a source of dissatisfaction. For prompt business the minimum quotation is 1.509c., Philadelphia, while the maker referred to asks 1.609c. for last quarter deliveries. Local shipyards are contributing largely to the demand. Two large tankers have been ordered from the William Cramp & Sons Ship & Engine Building Company and it has received some smaller orders as well.

Structural Material.—Eastern Pennsylvania mills are filled with work, and it is not uncommon for sellers to decline to quote on unattractive propositions, or for the fourth quarter. Quotations range from 1.509c. to 1.559c., Philadelphia, according to circumstances. Subway and elevated railroad extensions in this city will involve an attractive tonnage. The contract for the first section requiring 8500 tons of material has been let to the Keystone State Construction Company. The job contains considerably more riveted work than was anticipated. A good tonnage of bars is involved. The next section will require about 24,000 tons. Other local propositions are an addition to the Y. M. C. A. building, taking close to 300 tons, and a new building for the American Ice Company, requiring also about 300 tons. The Phoenix Iron Company has taken a contract for the Franklin Bank Building in which about 2000 tons of material will be used. The contract for about 700 tons of steel for a new warehouse for the W. J. McCahan Sugar Refining Company, Peter Ehlers, Philadelphia, chief engineer, has been awarded to Robert B. Lederle, Philadelphia.

Sheets.—An eastern Pennsylvania mill is asking 1.759c., Philadelphia, for No. 10 blue annealed sheets, delivery this year. This price is the minimum and in some cases a higher figure is quoted. The high prices obtainable for billets do not encourage the rolling of sheets.

Billets.—It is difficult to quote billets, as the situation in steel seems to grow more acute every day. One maker gives the price as $32 and upward, f.o.b. Eastern mill, depending on tonnage and specifications. This price is for ordinary rerolling billets. Others containing nickel and chrome have sold up to $35 at mill. Forging billets run about $4 per ton higher. A fair tonnage of Western billets has been sold in the East.

Coke.—A contract closed this week calls for the delivery of about 100,000 tons of furnace coke to an Eastern blast furnace at the rate of 8500 tons per month through 1916. The price will be based on a sliding scale arrangement. Prompt furnace is quoted at $1.50 to $1.60 per net ton at oven, and contract at $1.85 to $2. Foundry coke is in better demand, and firmer at $2.20 to $2.60 per net ton at oven for prompt and contract. Freight rates from the principal producing districts are as follows: Connellsville, $2.05; Latrobe, $1.85, and Mountain, $1.65.

Old Material.—The market continues strong under a good demand. Of some classes of material, such as low phosphorus scrap, iron axles and rails and wrought-iron pipe, there is a scarcity. Quotations for delivery in buyers' yards in this district, covering eastern Pennsylvania and taking freight rates from 35c. to $1.35 per gross ton, are as follows:

No. 1 heavy melting steel	$14.00 to $14.50
Old steel rails, rerolling	14.50 to 15.00
Low phos. heavy melting steel scrap	17.00 to 17.50
Old steel axles	19.00 to 20.00
Old iron axles (nominal)	22.00 to 23.00
Old iron rails	17.00 to 18.00
Old carwheels	13.50 to 14.00
No. 1 railroad wrought	15.50 to 16.00
Wrought-iron pipe	14.00 to 14.50
No. 1 forge fire	11.00 to 11.50
Bundled sheets	11.00 to 11.50
No. 2 busheling	9.50 to 10.00
Machine shop turnings	10.00 to 10.50
Cast borings	10.00 to 10.50
No. 1 cast	13.50 to 14.00
Grate bars, railroad	10.50 to 11.00
Stove plate	10.50 to 11.00
Railroad malleable	10.50 to 11.00

Charles Dreifus & Co., dealers in old material, have removed from the fifth floor of the Pennsylvania Building, Philadelphia, to more desirable offices on the thirteenth floor of the same building.

Cincinnati

CINCINNATI, OHIO, Aug. 25, 1915.—(*By Wire.*)

Pig Iron.—Sales in this territory are somewhat scattered. Several 500-ton lots of Northern iron have been sold to Ohio and Indiana melters for shipment in the first half. A few consumers have also covered for last quarter requirements, and in some instances they contemplate using the iron in the first quarter of next year. Buying of this character is not as heavy as it was in the first week of the month. An Indiana buyer recently contracted for 500 tons of Southern foundry iron for last quarter delivery, and a number of inquiries are out from the same territory for Southern iron for first half. The largest of these is for 1200 tons from Evansville, Ind., but up to the present time no open quotations have been made, and as far as is known no Southern producer has opened his books for the delivery mentioned. A firm in northern Ohio is asking for approximately 4000 tons of iron for first half, the analysis for which would admit bids from Southern furnaces. Northern iron is firm at $14, Ironton, for shipment this year, but an advance of 50c. per ton is asked for first half. Hanging Rock furnaces lost an order for 2000 tons of foundry iron for a north-central Ohio melter last week, the business going to a Lake furnace with a more advantageous freight rate. An inquiry from central Ohio calls for 500 tons of Bessemer ferrosilicon for this year's shipment and 1000 tons for first half. A sale of 500 tons of Ohio silvery iron for shipment in the next six months is reported, and a few smaller lots were taken by Ohio consumers. Based on an 8 per cent analysis, we quote Ohio silvery iron firm at $16.50 at furnace. Enough Southern No. 2 foundry iron is available for nearby shipment at $11, Birmingham, to warrant retaining this quotation, but the market appears to be gaining strength. Based on freight rates of $2.90 from Birmingham and $1.26 from Ironton, we quote, f.o.b. Cincinnati, as follows:

Southern coke, No .1 f'dry and 1 soft	$14.40 to $14.90
Southern coke, No. 2 f'dry and 2 soft	13.90 to 14.40
Southern coke, No. 3 foundry	13.40 to 13.90
Southern No. 4 foundry	12.90 to 13.40
Southern gray forge	12.40 to 12.90
Ohio silvery, 8 per cent silicon	17.76 to 18.01
Southern Ohio coke, No. 1	16.26 to 16.51
Southern Ohio coke, No. 2	15.26 to 15.51
Southern Ohio coke, No. 3	15.01 to 15.26
Southern Ohio malleable Bessemer	15.26 to 15.51
Basic, Northern	15.26 to 15.51
Lake Superior charcoal	16.20 to 17.20
Standard Southern carwheel	26.90 to 27.40

(*By Mail*)

Coke.—Specifications against contracts for foundry coke are increasing. Blast furnaces are also taking coke due them on old contracts at a satisfactory rate and are contracting for future requirements. Several tentative inquiries are out from foundries in the Central West for a first half supply, but the oven operators in all districts have been holding back the naming of prices for delivery beyond Jan. 1. While a number of furnace contracts have been made for shipments running well into next year, a large part of the business is yet to be placed. Spot shipment furnace coke in the Connellsville district is still quoted at very low prices. Some brands are obtainable around $1.50 to $1.65 per net ton at oven but contract figures are around $1.70 to $2. Connellsville foundry coke for nearby shipment is unchanged at $2.15 to $2.25 per net ton at oven. Wise County leading 48-hr. brands are held around $1.90 to $2 and Pocahontas furnace coke seems to be firm on a basis of $2 per net ton at oven. Contract foundry coke in all three fields ranges from $2.40 to $2.75.

Finished Material.—Although 3.75c., Pittsburgh basis, is the nominal quotation on No. 28 galvanized sheets, this price is being shaded to some extent. Black sheets continue to show more strength and we quote No. 28 around 1.90c. to 2c., Pittsburgh. The store price on No. 28 galvanized sheets remains unchanged at 4.50c., Cincinnati. There is a fair demand for both galvanized and black sheets for prompt delivery. Structural shapes are quoted from local warehouse stocks at 1.90c. to 2c., and steel bars 1.85c. to 1.90c. The mill price on steel bars quoted by different agencies is 1.35c., Pittsburgh. Round steel bars above 2 in. in diameter are in good demand. Steel hoops are quoted at 1.35c. to 1.40c. and bands at 1.35c., Pittsburgh.

Old Material.—The market is considerably stronger and further advances are registered on nearly all grades. Business is said to be fairly good with the rolling mills, as well as the jobbing foundries, which are now contracting for future supplies. The minimum figures given below represent what buyers are willing to pay for delivery in their yards, southern Ohio and Cincinnati, and the maximum quotations are dealers' prices, f.o.b. at yards:

Per Gross Ton

Bundled sheet scrap	$8.50 to $9.00
Old iron rails	12.00 to 12.50
Relaying rails, 50 lb. and up	20.25 to 20.75
Rerolling steel rails	10.50 to 11.00
Heavy melting steel scrap	10.50 to 11.00
Steel rails for melting	10.50 to 11.00

Per Net Ton

No. 1 railroad wrought	$9.50 to $10.00
Cast borings	6.25 to 6.75
Steel turnings	5.75 to 6.25
Railroad cast scrap	10.25 to 10.75
No. 1 machinery cast scrap	11.50 to 12.00
Burnt scrap	7.50 to 8.00
Old iron axles	15.00 to 15.50
Locomotive tires (smooth inside)	9.75 to 10.25
Pipes and flues	7.25 to 7.75
Malleable and steel scrap	8.50 to 9.00
Railroad tank and sheet scrap	6.50 to 7.00

Birmingham

BIRMINGHAM, ALA., Aug. 23, 1915.

Pig Iron.—Inability to accommodate even regular customers with the quantity and grade of metal desired, refusal to book orders except for regular customers, withdrawal from the market for the time being and such well-filled order books as to remain the sought rather than the seeking are characteristics of the Birmingham district iron situation. Another important interest has sold over its make for the month and, as it is unable to increase capacity, will necessarily hold for higher prices. The leading interest has been selling at the $11 level, but the week was not marked by additional orders for 1916 at the new price of $12.50. Several round lots went to the Middle West during the week at $11, with $11.50 for carload lots. Every indication points to inability to fill the demand for some time to come and a $11.50 minimum is probable, although no Birmingham office was quoting higher than $11 for round lots of spot at the close of the week last Saturday. Northern agents may have been doing so. The leading interest is still the only one quoting for 1916. Several consumers have purchased iron which they will not need until 1916 at prevailing prices and will store it. None of the 75,000 tons of speculators' iron bought around $9.25 has yet been heard of as issuing from yards. Belated speculators have been watched with a jealous eye by Birmingham operators and have failed in several attempts. The furnace resumption forecast is this: The Tennessee Company will blow in a second Bessemer stack Sept. 1; Woodward will be able to resume at Vanderbilt between Sept. 1 and 15; and Sloss-Sheffield will blow in about Sept. 1 an additional stack at North Birmingham, but blow out its twin stack for relining. After sixty days the relined stack will resume, giving the company five active ones. No other resumptions or increasing capacity are scheduled. Steel plants continue at capacity. Foundries are reported as very active in this district, but not so much so elsewhere in the South. The suit of Cecil Grenfell and other English capitalists to recover the value of their investment in the Southern States Steel Company will not affect the Gulf States Steel Company, its successor. The latter passed through the Federal court and issued a new concern with no entanglements. The decision of the Interstate Commerce Commission ordering the lower pig-iron rates from Birmingham to points north of the Ohio and east of the Mississippi put in effect by all railroads in that territory was expected. Some additonal trade will be secured by Birmingham operators as the result. We quote, per gross ton, f.o.b. Birmingham furnaces, as follows:

No. 1 foundry soft	$11.50 to $12.00
No. 2 foundry soft	11.00 to 11.50
No. 3 foundry	10.50 to 11.00
No. 4 foundry	10.25 to 10.75
Gray forge	10.00 to 10.50
Basic	11.00 to 11.50
Charcoal	23.00 to 23.50

Cast-Iron Pipe.—The water pipe and gas pipe makers have received sufficient additional fill-in orders to keep plants busy at the same good pace characterizing them for some time, and prices have hardened at the advance. Shipments are made direct from the pit. The sanitary pipe shops are not operating at above 50 per cent of capacity. We quote, per net ton, f.o.b. pipe shop yards, as follows: 4-in., $21.50; 6-in. and upward, $19.50, with $1 added for gas pipe.

Coal and Coke.—With the disappearance of a good deal of by-product coke from the market, the beehive make is strengthening even though additional ovens are going in. Two furnace interests have been purchasing by-product output, but will scarcely secure much more of it as it is needed by the makers for their own use. The foundry demand is increasing. We quote, per net ton, f.o.b. oven, as follows: Beehive furnace, $2.75 to $3; beehive foundry, $3.25 to $3.50; by-product, $2.50 to $2.75. The slightly better tone in the coal market has not developed beyond the general expectation of a larger demand along with the increased manufacture of coke, but here and there are evidences that improvement will shortly follow. Prices will be advanced Sept. 1. The Alabama Legislature has passed a law taking out of the mines by January, 1918, all convicts sentenced to five-year or shorter terms and removing by January, 1920, all convicts.

Old Material.—Scrap dealers are well satisfied with the activity of the present movement. There are practically no stocks on hand, but country scrap is beginning to come in and there is a fair amount derived from the breaking up of small-sized freight cars no longer available for use. Prices have advanced sharply, as much as $1 per ton in some cases. We quote, per gross ton, f.o.b. dealers' yards, as follows:

Old iron axles	$13.50 to $14.00
Old steel axles	13.00 to 13.50
Old iron rails	12.50 to 13.00
No. 1 railroad wrought	9.50 to 10.00
No. 2 railroad wrought	8.50 to 9.00
No. 1 country wrought	8.50 to 9.00
No. 1 machinery cast	9.50 to 10.00
No. 1 steel scrap	9.50 to 10.00
Tram carwheels	9.50 to 10.00
Stove plate	8.00 to 8.50

St. Louis

ST. LOUIS, MO., Aug. 23, 1915.

Pig Iron.—Continued buying has been the order, but there are still a considerable number of foundries which have not covered their needs. Practically all the Southern furnaces are up to $11.50, Birmingham, for No. 2 foundry, and the only $11 iron obtainable is for last quarter. The sales reported include 4000 tons of malleable, 750 and 2000 tons of Lake Superior charcoal, 2000 tons of Northern coke iron and 1000 tons and several of 500 and 300 tons of No. 2 Southern iron. Inquiries still outstanding include 1500 tons of No. 2 Southern and several for small quantities aggregating about 2500 tons.

Coke.—By-product coke continues to rule the market, with the price based on the keenness of competition.

Finished Iron and Steel.—The best deliveries promised are eight weeks ahead. The aggregate of the smaller orders is increasing steadily. The advanced prices are being paid freely, as well as those of the warehouse, where immediate delivery is essential. Fabricators report a notable increase in the number of jobs now being figured. Light rail demand is increasing. For material out of warehouse we quote as follows: Soft steel bars, 1.75c.; iron bars, 1.70c.; structural material, 1.85c.; tank plates, 1.85c.; No. 10 blue annealed sheets, 2c.; No. 28 black sheets, cold rolled, one pass, 2.55c.; No. 28 galvanized sheets, black sheet gage, 4.60c.

Old Material.—The influence of Eastern demand is being aided by more interested inquiry from the local industries, which as yet have not begun to buy in very large amounts. Steel scrap is the stronger, particularly rolling mill material and borings and turnings. Foundry grades are looking up and a sharp demand for all classes of material is looked for within the next thirty days. No lists came out in the week, and this absence of new supplies helped to strengthen the already strong undertone of the market. While prices are about unchanged, except in a few instances, there is less of range to quotations. We quote dealers' prices, f.o.b. consumers' works, St. Louis industrial district, as follows:

Per Gross Ton

Old iron rails	$11.00 to $11.50
Old steel rails, rerolling	12.00 to 12.50
Old steel rails, less than 3 ft.	11.50 to 12.00
Relaying rails, standard section, subject to inspection	21.00 to 23.00
Old carwheels	10.50 to 11.00
No. 1 railroad heavy melting steel scrap	11.50 to 12.00
Shoveling steel	9.50 to 10.00
Frogs, switches and guards cut apart	11.00 to 11.25
Bundled sheet scrap	6.75 to 7.25

Per Net Ton

Iron angle bars	$11.00 to $11.25
Steel angle bars	10.00 to 10.50
Iron car axles	15.75 to 16.25
Steel car axles	12.50 to 13.00
Wrought arch bars and transoms	12.75 to 13.25
No. 1 railroad wrought	10.50 to 10.75
No. 2 railroad wrought	10.00 to 10.50
Railroad springs	10.00 to 10.50
Steel couplers and knuckles	10.25 to 10.75
Locomotive tires, 42 in. and over, smooth inside	10.25 to 10.50
No. 1 dealers' forge	8.50 to 8.75
Mixed borings	7.00 to 7.50
No. 1 busheling	9.00 to 9.50
No. 1 boilers, cut to sheets and rings	7.50 to 8.00
No. 1 railroad cast scrap	9.75 to 10.25
Stove plate and light cast scrap	7.75 to 8.25
Railroad malleable	8.75 to 9.00
Agricultural malleable	7.75 to 8.00
Pipes and flues	7.00 to 7.50
Railroad sheet and tank scrap	7.00 to 7.25
Railroad grate bars	7.75 to 8.00
Machine shop turnings	7.50 to 8.00

Cleveland

CLEVELAND, OHIO, Aug. 24, 1915.

Iron Ore.—The market continues fairly active. A number of sales are reported in lots up to 75,000 tons and quite a few additional inquiries are pending. Orders are coming for the most part from consumers that bought some ore early in the season and are now covering for their requirements until the opening of the next season of navigation. The recent activity has caused a revision of the estimates of the season's shipments. It is now predicted that the movement of Lake Superior ore this year will reach 45,000,000 tons. We quote prices as follows, delivered to lower lake ports. Old Range Bessemer, $3.75; Mesaba Bessemer, $3.45; Old Range non-Bessemer, $3; Mesaba non-Bessemer, $2.80.

Pig Iron.—The market has quieted down somewhat, but prices are very firm with a tendency upward. Most producers are so well sold up that they do not care for additional business for this year and several are not solicitous regarding next year. Local prices are firm at $14.50 for foundry, malleable and basic iron for outside shipment for delivery during the remainder of the year. For the first half $15 at furnace is being asked by Cleveland and by some of the Valley furnaces, but sales of foundry iron are being made in the Valley at $14.50 for No. 2 for the first half delivery. One Lake furnace is quoting No. 2 foundry iron at $14 for the remainder of the year and another is asking $15, indicating a wider spread in prices than usual. Sales are mostly in small lots. A week or two ago the buying was largely for delivery over the remainder of the year, but the bulk of sales at present are for first half delivery. Among orders booked is one from a Mansfield interest for about 2000 tons of northern foundry iron for the first half. Southern iron is fairly active, considerable business being booked in small lot orders for the last quarter at $11.50, Birmingham, for No. 2. It is apparent that much of this iron is being bought to be carried over to the first quarter. Southern furnaces are asking $12.50 for that delivery. Ohio silvery iron is firm at $16.50 at furnace for 8 per cent and furnaces are asking an advance of 50c. for the first

half. Low-phosphorus iron is quite active. We quote delivered Cleveland as follows:

Bessemer	$16.45
Basic	$15.00 to 15.30
Northern No. 2 foundry	15.00 to 15.30
Southern No. 2 foundry	15.50
Gray forge	14.75
Jackson Co. silvery 8 per cent silicon	18.12
Standard low phos. Valley furnace	22.50

Coke.—Furnace coke for prompt shipment is not firm, but quotations are unchanged at $1.50 to $1.60 per net ton at oven. Some consumers would place last quarter contracts, but are unwillling to pay the prices asked, which range from $1.75 to $1.85 and higher. The price of one leading make of foundry coke has been advanced to $2.75 for contract. Other foundry coke prices range from $2.25 to $2.50 for standard makes.

Finished Iron and Steel.—Specifications are heavy and there is a fair volume of new business. The 1.35c. price on steel bars, plates, and structural material is being maintained by most of the leading mills, but desirable orders will still bring out a 1.30c. price, and plates can be had at 1.25c. from the smaller mills. There is considerable inquiry from Ohio manufacturing plants for shrapnel steel in lots from 5000 to 15,000 tons, and some of the mills are still able to make the deliveries desired, but it is reported that the prices asked are delaying the tracing of some orders. A Youngstown manufacturer is in the market for 4000 to 5000 tons of steel for rifle barrels. The heavy demand for large rounds is reflected in a $5 a ton advance in warehouse prices on 2-in. and larger rounds, which are now quoted at 2.15c. The structural situation is not active, the only new inquiry involving round tonnage being for an addition to the Hollenden Hotel, Cleveland. Semi-finished steel is very firm and some spot shipment sales are reported at $24, Youngstown, for Bessemer sheet bars; $25 for open-hearth sheet bars and $25 for open-hearth billets. Black and blue annealed sheets are very firm at 1.85c. to 1.90c. for No. 28 black and 1.40c. to 1.50c. for No. 10 blue annealed. Galvanized sheets are quoted at 3.75c. to 4c. for No. 28. Iron bars have stiffened up to 1.25c., Pittsburgh, and hard steel bars are quoted at the same price. Warehouse business is active. Warehouse prices are 1.90c. for steel bars and 2c. for plates and structural material.

Old Material.—The market is not active, buying being limited mostly to small lots. Mills generally, both here and in the Valley, have enough scrap under contract to last them for several weeks. A weakening tendency has appeared in the market during the past day or two. Dealers, however, are holding up quotations and prices on several grades are higher than a week ago. We quote f.o.b. Cleveland, as follows:

Per Gross Ton	
Old steel rails, rerolling	$11.75 to $12.75
Old iron rails (nominal)	13.00
Steel car axles	14.00
Heavy melting steel	12.00 to 12.50
Old carwheels	9.75 to 10.00
Relaying rails, 50 lb. and over	22.50
Agricultural malleable	9.50 to 10.00
Railroad malleable	11.50 to 12.00
Steel axle turnings	9.00 to 9.25
Light bundled sheet scrap	9.50 to 10.00
Per Net Ton	
Iron car axles	$15.00 to $15.50
Cast borings	6.50 to 7.00
Iron and steel turnings and drillings	6.00 to 6.25
No. 1 busheling	9.25 to 9.50
No. 1 railroad wrought	10.75 to 11.25
No. 1 cast	11.00 to 11.50
Railroad grate bars	8.00 to 8.50
Stove plate	8.50 to 8.75

Bolts, Nuts and Rivets.—The demand for bolts and nuts continues active and prices are firm. Makers are being crowded for early shipments. Rivet specifications are good. We quote rivets at 1.60c., Pittsburgh, for structural and 1.70c. for boiler rivets, but these prices can be shaded $1 or $2 a ton for desirable orders for early shipment. Bolt and nut discounts are as follows: Common carriage bolts, ⅜ x 6 in., smaller or shorter, rolled thread, 75, 10, 10 and 5; cut thread, 75, 10 and 10; larger or longer, 75 and 5; machine bolts with h.p. nuts, ⅜ x 4 in., smaller or shorter, rolled thread, 75, 10, 10 and 10 per cent; cut thread, 75, 10, 10 and 5 per cent; larger and longer, 75 and 10; coach and lag screws, 80 and 15 per cent; square h.p. nuts, blank or tapped, $6 off the list; hexagon h.p. nuts, blank or tapped, $6.70 off; c.p.c. and t. square nuts, blank or tapped, $5.50 off; hexagon, ⅝-in. and larger, $7 off; 9/16 and smaller, $7.50 off.

Buffalo

BUFFALO, N. Y., Aug. 24, 1915.

Pig Iron.—Prices continue to show an upward trend and $14.50 at furnace appears to the minimum ruling price for No. 2 X foundry and malleable for delivery over fourth quarter and first quarter of 1916. Some furnaces are asking more and one producing interest is out of the market and not quoting at all for the present. There are opinions that furnaces are working up to $15, in view of possible coke shortage. An aggregate of 40,000 to 50,000 tons, various grades, is again the record of sales for the week, making a total of approximately 100,000 tons sold in the last two weeks. On many orders taken for shipment after Jan. 1, the buyers have reserved the privilege of anticipating shipment in the fourth quarter. Furnaces are not yet selling for full first half delivery. We quote as follows, f.o.b. furnace, Buffalo, for fourth quarter of 1915 and first quarter of 1916:

No. 1 foundry	$14.75 to $15.00
No. 2 X foundry	14.50 to 14.75
No. 2 plain	14.50
No. 3 foundry	14.50
Gray forge	14.50
Malleable	14.50 to 14.75
Basic	14.75 to 15.00
Charcoal (regular grades and analysis)	16.75 to 18.25
Charcoal (special grades and analysis)	20.00 to 21.00

Finished Iron and Steel.—Demand for bar products is beyond anything the mills have experienced in years. It is not confined to orders for war materials, but is extending to general commercial lines. The independent companies have now advanced their minimum on bars, plates and shapes to 1.35c., Pittsburgh, and warehouse prices on these commodities were advanced $2 per ton on all except large sizes of bars and $7 per ton over present base on large sizes, making bars 1.95c., Buffalo, plates and shapes 2c. and rounds and squares over 2 in., 2.30c. Mill deliveries are running further behind, four weeks to ninety days on bars and sixty to ninety days on cold finished steel being the rule. Shape deliveries that until recently were made pretty promptly are becoming much more extended; some sizes cannot be had before October. Some of the Eastern mills which two months ago were underselling the market $2 per ton are now obtaining premiums of $4 to $6 per ton for reasonably prompt shipment. Wire nails and plain wire have been advanced but galvanized wire has been reduced. Business in fabricated structural lines has been light for the week. The Buffalo Structural Steel Company has steel contracts for the Buffalo Copper & Brass Rolling Mill and for a garage for the Buffalo General Electric Company.

Old Material.—The market continues strong and shows price gains in many commodities, particularly in heavy melting steel and old steel axles. The principal local consumer is taking on heavy melting steel and orders are being taken by dealers for a considerable aggregate of this material for outside points. Most of the orders accepted by dealers are not for the full quantities asked for, orders involving 1000 tons being considered large. Dealers are disposed to hold in check large purchases, believing that the top of the market has not been reached. A decided advance is looked for in cast scrap, old car wheels and malleable within a short time. We quote dealers' asking prices per gross ton, f.o.b. Buffalo, as follows.

Heavy melting steel	$13.00 to $13.50
Low phosphorus steel	15.50 to 16.00
No. 1 railroad wrought scrap	12.00 to 12.50
No. 1 railroad and machinery cast	11.50 to 12.00
Old steel axles	16.00 to 16.50
Old iron axles	17.00 to 17.50
Old carwheels	12.00 to 12.50
Railroad malleable	11.50 to 12.00
Machine shop turnings	7.00 to 7.50
Heavy axle turnings	8.50 to 9.00
Clean cast borings	7.00 to 7.25
Old iron rails	12.00 to 12.50
Locomotive grate bars	9.00 to 9.50
Stove plate (net ton)	8.50 to 9.00
Wrought pipe	9.50 to 10.00
Bundled sheet scrap	8.50 to 9.00
No. 1 busheling scrap	9.00 to 9.50
No. 2 busheling scrap	7.50 to 8.00
Bundled tin scrap	9.00

British Iron Market Firmer

Russian Rail Demands Large—High-Grade Ferrosilicon Still Advancing

(By Cable)

LONDON, ENGLAND, Aug. 25, 1915.

The pig-iron market is quiet but firmer because of the Russian naval victory. There is a steady demand for export trade from neutral countries, but shipments are small. Hematite iron is weak and stagnant, and there is no improvement in tin plates, the works taking few figures for definite business. Export trade is still hampered by the restrictions in force. Stocks of pig iron in Connal's stores are 140,884 gross tons, against 142,990 tons a week ago.

After placing about 175,000 tons of rails in the United States, Russia is inquiring for 50,000 tons, which may go to Canada. American sellers are asking £35 for sheet bars c.i.f. Liverpool for last quarter shipment.

Ferrosilicon is strong and is now quoted at £19 c.i.f. (or $88.56 with exchange at $4.65½).

We quote as follows:

Tin plates, coke, 14 x 20, 112 sheets, 108 lb., f.o.b. Wales, 18s. 3d.

Cleveland pig-iron warrants, 65s. 3d., as compared with 64s. 9d. last week.

No. 3 Cleveland pig iron, maker's price, f.o.b. Middlesbrough, 65s. 6d., against 65s. one week ago.

Steel black sheets, No. 28, export, f.o.b. Liverpool, £11 15s.

Steel ship plates, Scotch, delivered local yards, £9 15s.

Steel rails, export, f.o.b. works port, £8 17s. 6d.

Hematite pig iron, f.o.b. Tees, 97s.

Sheet bars (Welsh), delivered at works in Swansea Valley, £7 10s.

Steel joists, 15 in., export, f.o.b. Hull or Grimsby, £10 10s., against £10 a week ago.

Steel bars, export, f.o.b. Clyde, £11 5s., compared with £10 15s. last week.

Ferromanganese, f.o.b., £20 15s.

Ferrosilicon, 50 per cent, c.i.f., £19, against £16 10s. one week ago.

(By Mail)

July Pig-Iron Exports Large—Receipts of Manganese Ore Much Below the Average

LONDON, ENGLAND, Aug. 18, 1915.—The increased facilities available in connection with pig-iron exports were reflected in the Board of Trade returns, the total clearances from the entire country during July actually exceeding those of the same month last year, at 78,370 tons against 74,617 tons, though the total for the seven months is lamentably less than that of 1914, at 245,292 tons against 585,997 tons. The Cleveland district, of course, did the great bulk of the business. Its foreign shipments in January were 15,194 tons, against 41,913 tons in January, 1914. For July they were 55,933 tons, or 11,000 tons more than in July of last year. The Cleveland district's shipments for the first seven months of this year were 179,326 tons—26,002 tons coastwise and 153,324 tons foreign—against a total of 692,646 for January to July inclusive, last year—311,362 tons coastwise and 381,284 tons export.

In the expectation that things will remain moderately good under the circumstances, makers are not disposed to press material upon the market, though there seems to be some hesitation felt in connection with fuel, where government efforts to check the strong tendencies of masters and men to make fabulous profits out of the war may possibly result in keeping down selling prices. The way in which the war is being generally exploited by the coal trade is a scandal, and almost any steps which might be taken by the authorities to stop this sort of patriotism would receive the whole-hearted support of the better portion of the community. The holidays have caused a considerable suspension of pig-iron output in the Midlands, but works are now running again pretty regularly after serious complaints for some days as to the absence of employees.

The hematite position is uncertain and price movements have been irregular. Few inquiries have been dealt with, but values within the last day or two have again shown a downward tendency, the change not being altogether unexpected, because for some time hematite iron has been realizing very high prices compared with Cleveland. Users seem to be just covering their present requirements, and there is still very little forward buying. Special grades of hematite, however, are in good request from the high-class consumers, and there is a possibility of one or two extra furnaces being put into blast on these grades.

THE FERROMANGANESE POSITION

There is no alteration in ferromanganese, which remains at £20 a ton. As already advised by cable, a monthly return of stocks is now required by the authorities, while consumers must keep on hand a tonnage equal to three months' supply. The quantity of ore coming in is very much below the average, the arrivals during July being under 20,000 tons, against about 33,000 tons a year ago, while the total for the seven months just finished was 154,000 tons, against 278,000 tons in 1914. There is no doubt that the strict regulation of the trade at the instance of the government action will last until the war is over.

The report just issued for May and June of the Wages Board which controlled iron workers' wages in the Midlands and Wales shows an advance of 14s. 3d. in the average net selling price compared with March and April, with a substantial decline in the output. In March and April the average selling price was £7 16s. 6d. a ton for finished iron, and rose during May and June to £8 10s. 9d., which compares with £6 15s. 9d. in May and June, 1914. The wages for puddling, under the periodic settlement, have been advanced to 10s. 9d. a ton, while at all other mills and forges wages have been raised 7½ per cent. In addition to the puddling rate of 10s. 9d. a ton, puddlers receive an allowance of 6d. per ton, making the total rate 11s. 3d. a ton. There is only too much reason to think that the enormous wages now being paid will lead to still further slackness among the workers in whom the sense of patriotism, as revealed by the action of the various unions and their members during the stress of war times, has been atrophied. The mere fact that this country needs all the iron, steel and fuel that can be obtained is being generally exploited on the one hand by capital and on the other hand by labor. This is partly due, so far as labor is concerned, to the fact that all the best men went to the war long ago, and that those remaining represent the poorest type.

Finished steel business is gradually dwindling as works go more and more on government contracts. This, combined with the shutting off of the German market, is giving American manufacturers the chance of their lives, and no doubt this fact is fully recognized by those concerned whose activities in the export markets are being limited only by the freight facilities available.

New York

NEW YORK, Aug. 25, 1915.

Pig Iron.—Sales have been heavy in some directions and light in others. All prices are advancing. New England buyers of foundry pig iron have led in the matter of providing for a part of their wants for 1916, probably because a good deal of activity in connection with manufactures for war has centered in that section, though stove, furnace, malleable and railroad work is quite under normal. Buffalo furnaces have done the greater part of the business and it is probable that their sales in the past ten days or two weeks have amounted to 100,000 tons, a large part of it for delivery after Jan. 1. These sales were made for the most part at $14, Buffalo furnace, though at $13.50, sales were made covering the last quarter of this year with some hang-over into 1916. New York State foundries have not participated to any great extent in the movement. Buffalo sellers as a rule have now put their price up to $14.50 at furnace for delivery in the last quarter and first quarter, and some sales have

been made at this price. Business has slackened off, however, due to the fact that one interest has decided to sell no more iron for the present for the second quarter, while another has decided to withdraw as a seller for the present for any delivery. The question of the amount of foundry iron Buffalo will have to sell for the next six or eight months depends on what call, if any, will be made by steel works in that district upon merchant furnaces for basic iron to supplement their own product. At present cold pig iron in yard is being drawn on by the steel works there and additional open hearth furnaces are expected to be ready to operate in September. The furnaces in eastern Pennsylvania and those in Virginia have not yet participated to any extent in the New England buying but at $14.50, Buffalo, the Virginia furnaces which are selling at $13 to $13.50 at furnace for No. 2 X could undersell Buffalo producers in New England. They could also undersell eastern Pennsylvania furnaces which are now quoting $14.75 at furnace and in some cases considerably higher for No. 2 X. Buffalo furnaces, which for some time have made a flat price for their iron regardless of silicon content, are now inclined to restore the silicon differentials. In the past ten days, for example, sales were made of forge iron at $14 at furnace for the first half of next year, the total being 20,000 tons for one eastern New York State interest. At the same time a 3 per cent silicon iron could have been had at the same figure. A New England steel plant is in the market for 6000 to 8000 tons of basic iron and two important interests, which buy iron in New York, are inquiring for a total of 4000 tons for western plants, for which the iron would naturally come from Chicago district furnaces. We quote at tidewater as follows for third quarter delivery: No. 1 foundry, $16 to $16.25; No. 2 X, $15.50 to $15.75; No. 2, plain, $15.25 to $15.50; Southern iron, $16 to $16.25 for No. 1 and $15.75 to $16 for No. 2.

Structural Material.—The outstanding fact is the well-booked capacity of structural mills and the consequent price strength of plain material. Small lots are moving at 1.40c. Pittsburgh and 1.35c. is general for large lots. The demand for steel in other forms has, of course, had the effect of reducing shape-rolling capacity, but the fact remains there is a steady consumption of structural material even with the still light buying for railroad bridge work and the moderate (as yet) takings for railroad cars. Fabricated work has not bettered locally and while well occupied fabricators are actively hunting new business with the result that their prices have not yet responded fully to the advances made by the steel itself. Deliveries are somewhat more extended, commonly eight to twelve weeks, and movement out of warehouse is brisk and at prices $2 a ton higher than a week ago. New building activity is represented heavily in apartment buildings, probably 10,000 tons now under active consideration. About 4000 tons of fabricated structures is about to be placed for the Cramp shipyards, Philadelphia. Besides the 2200 tons for a pier at Greenville, N. J., the Pennsylvania Railroad has about 1000 tons of bridge work before the market, and reports are that this road will continue an active buyer of structural and other material for some time. Some 850 tons of latticed and other girders of 60 to 180 ft. spans are wanted by the Hankow-Szechuan railroad line, China, bids to be made through Robert W. Hunt & Co., Chicago, but the specifications, submitted in German, are unusual and there is so much indefiniteness as to when deliveries can be made, by June, 1916, or may be a year later, that it is not expected that the business will be covered in this country. Awards of fabricated work do not include any work of size, about the largest single project substantially settled being the Twenty-ninth Street pier, Brooklyn, the general contractor for which, it is reported, being likely to place the 650 tons with Milliken Brothers. We quote mill shipments at 1.35c., Pittsburgh, or 1.519c., New York. For small lots from store we quote 2.05c. to 2.10c., New York.

Steel Plates.—Sales at 1.35c., Pittsburgh basis, and higher are noted, including round lots which the buyer was unable to get under existing contracts at 1.15c. At least one case is also noted of a rush order at $7 a ton premium. Deliveries are more extended, nearer six weeks than four, from Eastern mills, except for universal plates, for which, however, better demand has developed. The New York Central is taking bids on 1000 box cars; the Virginia-Carolina on 120 box cars, the Santa Fe on 500 stock cars, and the Bangor & Aroostook on 100 flat cars. The American Car & Foundry Company is to build 50 cabooses for the Chicago & Northwestern and 10 tank cars for the Illinois Steel Company, and the Pullman Company 35 refrigerator cars for the Wells Fargo Company. We quote mill shipments of plates at 1.30c. to 1.40c., Pittsburgh, or 1.469c. to 1.569c., New York, the minimum prices being based on indications that an attractive tonnage would bring that price. Plates from store are 2.05c. to 2.10c., New York.

Iron and Steel Bars.—Steel bars are strong at 1.35c, Pittsburgh, as are iron bars at $1 per ton lower. Mills are careful in promising this year delivery on new business. They have little capacity available for export, unless domestic buying, for which they have left opportunities for filling needs, should not materially increase. In such cases 1.35c. appears to be good for the rest of the year, a figure which is better for the mills than that of existing contracts through the fourth quarter. We quote mill shipments of steel bars at 1.35c., Pittsburgh, or 1.519c., New York, and refined iron bars, to 1.469c., New York. Out of store in New York iron and steel bars are 2c. to 2.05c.

Ferroalloys.—While a fair tonnage of ferromanganese is being received this month, released by the July licenses of the British Government to producers in that country, it is admitted by representatives here that September receipts will be insignificant, because of drastic restrictions in August licenses. Brokers here are uninformed as to what will be done regarding September licenses, but are not hopeful of any liberal consignments until the situation over there is adjusted to war conditions and to manganese ore supplies. Some sales are reported of prompt material at $100 and more, seaboard, and some orders are accepted subject to license to ship, but the market is inactive with little interest shown and with the quotation nominal at $100, seaboard. One representative here is entirely out of the market for the present. Rumors of sales of resale lots as high as $130, seaboard, are heard as well as the prediction that $200 ferromanganese is to be realized. Domestic producers do not appear to be active at present, one Eastern maker being understood to ask as high as $132.50. It is said that they are not pressing their output at present in the anticipation of higher prices. Sales of at least 5000 tons of spiegeleisen in the past week or so are noted and it is believed that some of this is for consumption by steelmakers in partial substitution for ferromanganese. The price is about $26 at furnace. Ferrosilicon, 50 per cent is very active, particularly for foreign consumption, though the domestic demand is by no means insignificant. A report of an advance in the quotation of $71 to $73, Pittsburgh, has not been confirmed here, though agents report conditions such as to justify it.

Cast-Iron Pipe.—A feature of the situation is the appearance of inquiries from private buyers for prices for delivery in the spring of 1916. It appears likely that few pipe manufacturers will care to quote for delivery so far ahead in the face of rising prices on pig iron. The volume of private buying for delivery this year keeps up well. No public lettings of importance have appeared, but contractors are asking for prices on 25,000 ft. of 6-in. and 6000 ft. of 8-in. for Westbury, L. I., and on 14,000 ft. of 4-in., 2300 ft. of 6-in. and 3600 ft. of 8-in. for Youngsville, Warren County, Pa. Inquiries for prices on pipe for export are steadily being received, but no business of this character has recently been closed. British pipe makers are naming prices for South American delivery which are much under those named by American makers. Carload lots of 6-in., class B and heavier, are quoted at $23.50 to $24 per net ton, tidewater, class A and gas pipe taking an extra of $1 per ton.

Old Material.—The market continues active and strong. The movement the past week has been somewhat heavier on rolling-mill stock than in steel scrap. Prices of such specialties as iron axles have moved up sharply on account of the scarcity of steel billets. Wrought scrap is in increasing demand at advancing prices. Borings and turnings present a contrast to general conditions, as they are in ample supply as the result of the activity of many machine shops in turning out shrapnel. Brokers are paying about as follows to local dealers and producers, per gross ton, New York:

Old girder and T rails melting	$12.00 to $12.25
Heavy melting steel scrap	12.00 to 12.25
Relaying rails	19.50 to 20.00
Rerolling rails	12.00 to 12.50
Iron car axles	21.00 to 21.50
Steel car axles	16.50 to 17.00
No. 1 railroad wrought	13.50 to 14.00
Wrought-iron track scrap	12.50 to 13.00
No. 1 yard wrought, long	12.25 to 12.75
No. 1 yard wrought, short	12.00 to 12.25
Light iron (nominal)	4.00 to 4.25
Cast borings	7.50 to 7.75
Wrought turnings	7.50 to 7.75
Wrought pipe	11.50 to 12.00

Cast scrap continues to move in comparatively small quantities as the foundries are not yet working up to their normal capacity. Dealers' quotations to consumers of cast scrap are as follows per gross ton, New York:

Old carwheels	$11.50 to $12.00
No. 1 cast (machinery)	12.75 to 13.00
No. 2 cast (heavy)	11.75 to 12.00
Stove plate	9.75 to 10.00
Locomotive grate bars	8.50 to 8.75
Malleable cast (railroad)	9.50 to 10.00

Metal Market

NEW YORK, Aug. 25, 1915.

The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York			Lead		Spelter	
Aug.	Lake	Electrolytic	Tin, New York	New York	St. Louis	New York	St. Louis
18	19.00	16.50	34.00	4.47½	4.35	11.25	11.00
19	19.00	16.25	33.90	4.45	4.35	11.00	10.75
20	19.00	16.25	33.62½	4.45	4.30	11.25	11.00
21	19.00	16.12½	....	4.45	4.30	11.50	11.25
23	19.00	16.00	33.50	4.47½	4.35	12.00	11.75
24	19.00	16.00	33.75	4.50	4.35	12.50	12.25

Copper has continued to decline, and there has been but little business. Tin has been active in a small way, but prices are lower. Lead is firmer, with an irregular demand. Spelter prices have advanced a few points under the stimulus of better buying. Antimony is dull and lower.

New York

Copper.—The situation is not altogether an easy one to read. The one certain thing is that there has been price cutting, and that the producers are quoting lower figures, despite their recent efforts to hold at 17c. It is reported that one producer took an order for electrolytic at 16c., full terms, or 15.87½c. cash, New York, but it is figured that not a great deal of metal was sold at this price, for most of the producers are resisting the decline and are not eager to sell. In fact, an encouraging symptom is a disposition on the part of second hands to buy, provided they can get copper at about 16c., full terms. Naturally they do not buy until their judgment foresees a profit. The trade feels the market is unduly depressed, possibly by the influence of one of the belligerent governments which wants to buy cheaper copper. The talk of large inquiries for export persists, but so far nothing has been done, and it no longer excites more than passing interest. The exports of the month total but 13,112 tons. Lake copper is as quiet as electrolytic, if not more so. The last sales reported were made at 19c., cash, New York.

Tin.—The market was extremely dull until yesterday, when a good demand developed for small lots ranging from 5 to 15 tons and a lively business resulted. It was widespread and showed that the smaller consumers were almost of one mind as to the wisdom of buying. The New York quotation yesterday was 33.75c. for spot metal. The larger consumers continue to stand by and watch the market. For the present they are amply covered. The arrivals this month total 3675 tons, and there is 5035 tons reported afloat. The London quotation for spot Straits yesterday was £150 10s.

Lead.—The market is more active, though somewhat irregular in that all sellers do not report that they are feeling the improved demand. The New York quotation, nevertheless, is up to 4.50c. again, which is the quotation of the leading interest, and little or no lead can be had under this figure. Last week the buying was of such a caliber as to give rise to a belief that a really big buying movement had set in, but it subsided about the middle of the week. At times, during the flurry, prices varied as much as 7½ points within one hour. The market, however, was left stronger, and the pessimistic feeling which had prevailed practically disappeared. The St. Louis price yesterday was 4.35c. The month's exports to date total 1958 tons.

Spelter.—About the middle of last week the downward course of spelter prices was arrested by the appearance of the best demand of several weeks. Quotations have strengthened almost daily since then, and those of yesterday were 12.50c., New York, and 12.25c., St. Louis, for prompt delivery. Brass mill special is held at 15c., while very choice grades are still quoted at 30c. to 40c., but there is no business at these high figures. The London market is correspondingly strong. The exports of this month total 3476 tons.

Antimony.—In a dull market concessions have vied with each other, and Chinese antimony can be had at 28.50c., duty paid, in store, New York.

Old Metals.—The market is lifeless and it is difficult to make quotations. Dealers' selling prices are nominally as follows:

	Cents per lb.
Copper, heavy and crucible	16.00 to 16.50
Copper heavy and wire	15.50 to 16.00
Copper, light and bottoms	13.50 to 14.00
Brass, heavy	11.00 to 11.50
Brass, light	9.00 to 9.50
Heavy machine composition	13.00 to 13.50
No. 1 yellow rod brass turnings	12.50 to 13.00
No. 1 red brass or composition turnings	11.50 to 12.00
Lead, heavy	4.25
Lead, tea	4.00
Zinc, scrap	8.00

Chicago

AUG. 23.—The slump in copper prices is unchecked and parallels the general decline in metal values. The reduction in zinc quotations is even more pronounced. The spelter market now appears to have regained a measure of strength, and recent minimum prices are not now obtainable. We quote: Casting copper, 15.75c.; Lake copper, 16.75c.; tin, carloads, 34.50c.; small lots, 36c.; lead, 4.40c.; spelter, nominally, 12c. to 13c.; sheet zinc, nominally 17c.; Cookson's antimony, 47.50c. to 50c.; other grades, 33c. On old metals we quote buying prices for less than carload lots as follows: Copper wire, crucible shapes, 13c.; copper bottoms, 12c.; copper clips, 12.50c.; red brass, 10.50c.; yellow brass, 9.50c.; lead pipe, 3.75c.; zinc, 5c.; pewter, No. 1, 17c.; tinfoil, 24c.; block tin pipe, 26c.

St. Louis

AUG. 23.—The nonferrous metals have continued their easing off during the week. Lead is quoted at 4.30c., with no sales of consequence; spelter is nominal at 11c. to 12c., and the uncertainty is so pronounced that few transactions are reported; tin, 34c.; Lake copper, 18c.; electrolytic copper, 17½c.; Cookson's antimony, 32c. In the Joplin ore market there was further weakness in prices and the basis range on zinc blende was $60 to $80 per ton with the top settlement at $83. Calamine sold at $43 to $48, with the top settlement at $52. Lead ore was dull at $50 for 80 per cent. Miscellaneous scrap metals are quoted as follows: Light brass, 6.50c.; heavy yellow brass, 8.50c.; heavy red brass and light copper, 10c.; heavy copper and copper wire, 12c.; zinc, 6.50c.; pewter, 20c.; tinfoil, 28c.; lead, 3.50c.; tea lead, 3.50c.

Contracts for armor plate for two new Swedish cruisers have been awarded to the Carnegie Steel Company, according to information from the American legation at Stockholm, Sweden. About $700,000 is involved.

Iron and Industrial Stocks

NEW YORK, Aug. 25, 1915.

The stock market displayed increasing buoyancy until Thursday of last week, when a severe shock was given by the news that the White Star steamship Arabic, bound from Liverpool for New York, had been torpedoed by a German submarine, and that several American passengers had lost their lives. At no time, however, did the market approach a panicky condition, the belief prevailing that President Wilson will handle this serious international problem with discretion. Some stocks maintained their upward movement despite this unfortunate occurrence. Prominent among such stocks was Lackawanna Steel, whose earnings are now reported to be heavily increasing. The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of this week, which will be seen to have been unusually wide, was as follows:

Allis-Chal., com..	30⅛- 42	Ry. Stl. Spring, com.	35¾- 44¼
Allis-Chal., pref..	64 - 72½	Republic, com...	38⅝- 46½
Am. Can, com...	52¾- 64	Republic, pref...	99¼-102⅞
Am. Can, pref...	105 -106⅞	Rumely Co., com.	9 - 12⅞
Am. Car & Fdy., com.	61 - 72¾	Rumely Co., pref.	13 - 17½
Am. Loco., com..	48 - 57½	Sloss, com.	47¾- 56⅞
Am. Loco., pref..	96½- 98½	Sloss, pref.	89 - 93¼
Am. Stl. Fdries..	45⅝- 58	Pipe, com.	19½- 22⅝
Bald. Loco., com.	70 - 81⅞	Pipe, pref.	47
Bald. Loco., pref.	104 -104½	U. S. Steel, com..	67¾- 77⅝
Beth. Steel, com.	268 -289¾	U. S. Steel, pref..	110 -112⅞
Beth. Steel, pref.	136 -151	Va. I. C. & Coke.	55 - 64⅞
Colorado Fuel...	37 - 44⅛	West'gh'se Elec..	109 -119¾
General Electric.	167¼-176	Am. Ship, com...	38⅛- 41½
Gt. No. Ore Cert.	38½- 45	Am. Ship, pref.	74
Int. Harv. of N. J., com.	100⅞-107	Chic. Pneu. Tool.	71 - 78½
Int. Harv. Corp., com.	67	Cambria Steel..	50½- 55¼
Lacka. Steel....	51½- 65	Lake Sup. Corp..	9 - 10
Nat. En. & Stm., com.	23¼- 29⅝	Warwick	10 - 10½
Pressed Stl., com.	53¾- 65¾	Cruc. Steel, com.	65 - 73¾
Pressed Stl., pref.	100⅛-101¼	Cruc. Steel, pref.	100 -102½
		Harb-Walk. Refrac., pref.	99
		La Belle Iron, com.	36 - 36½

Dividends

The New York Air Brake Company, regular quarterly, 1½ per cent, payable Sept. 24.

The General Electric Company, regular quarterly, 2 per cent, payable Oct. 15.

The Harbison-Walker Refractories Company, regular quarterly, ½ of 1 per cent on the common stock, payable Sept. 1.

The Mergenthaler Linotype Company, regular quarterly, 2½ per cent, payable Sept. 30.

The Moline Plow Company, regular quarterly, 1¾ per cent on the first preferred stock, payable Sept. 1.

Germany's Pig-Iron and Steel Output

Germany's pig-iron output in June was 993,496 metric tons as compared with 985,968 tons in May of this year. The daily production rose from 31,805 tons in May to 33,116 tons in June—the greatest daily and monthly output since the war began. In June, 1914, the production was 1,531,313 tons. For the first half of 1915 the total was 5,534,337 tons, as compared with 9,287,847 tons to July 1, 1914.

The Association of Iron and Steel Producers returns the June production of steel at 1,080,786 tons, against 1,044,107 tons in May, 1915. The June output was made up as follows: Bessemer ingots, 566,602 tons; open-hearth ingots, 450,989 tons; steel castings, 54,857 tons; crucible steel, 8366 tons; electric steel, 9972 tons. The total for the first six months of 1915 was 6,145,483 tons. The year's production in 1914 was 14,389,547 tons.

Work was begun this week on the tearing down of one of the furnaces of the Carnegie Steel Company at Bellaire, Ohio, which has just been blown out to be replaced by an entirely new stack. Both furnaces at Bellaire have been active since March, 1914, and the work of construction will not interfere with the continued operation of the one that is still in blast. The new furnace will probably be ready to start up by February.

Association of Iron and Steel Electrical Engineers

The program for the ninth annual convention of the Association of Iron and Steel Electrical Engineers to be held in the Hotel Statler, Detroit, Mich., Sept. 8 to 11, is in part as follows:

Wednesday, Sept. 8, 2 p. m.: "Improving Non-Condensing Power Plant by Use of Direct Current Mixed Pressure Turbine Equipment, etc.," by R. P. Patterson; "Wire Rope and Its Relation to Steel Making," by James F. Howe.

Thursday, Sept. 9, joint session with American Institute of Electrical Engineers, 9 a. m.: "Recent Developments in Power Generating Apparatus," by P. M. Lincoln; "Protection and Control of Industrial Electric Power," by Chas. P. Steinmetz; "Motor-Generators vs. Rotary-Converters," by E. Friedlaender. 2 p. m.: "Some of the Latest Developments in Electrical Equipment," by K. A. Pauly; "Progress in the Iron and Steel Industry and the Electric Furnace," by Dr. Karl Geo. Frank; "Mechanical Analogies in Electricity and Magnetism," by Prof. W. S. Franklin.

Friday, Sept. 10, 9 a. m.: "The Electrification of Steel Mills and the Use of Central Station Power," by Brent Wiley and Wilfred Sykes; "Purchased Power for Steel Mills," by C. S. Lankton; "Some Electrical Applications in Steel Mill Practice," by D. M. Petty. 2 p. m.: "Latest Development of Electric Cranes for Steel Mills Manufactured by the Alliance Machine Company," by E. H. Kendall; "Installation of Electrical Equipment to Comply with Requirements of Safety," by Walter Greenwood.

Higher Southern Rates On Coal and Coke

WASHINGTON, D. C., Aug. 24, 1915.—The Interstate Commerce Commission has handed down a decision authorizing railroads to increase by 15 cents a net ton the rates on bituminous coal from mines in Alabama, Illinois, and Kentucky to New Orleans, La., Memphis, Tenn., Greenville, Natchez, and Gulfport, Miss., and certain other points in Mississippi and Louisiana. In the same decision the commission authorized a readjustment of the rates on coke from ovens in Kentucky, Alabama, Tennessee and Illinois to Mississippi Valley points, providing for an increase greater than that on coal. As to the ground for this the commission said in part: "It is asserted that the differential in rates on coke over rates on coal in most parts of the country is from 30 to 50 cents per ton. Coke is said to be of twice the value of coal, and its specific gravity such that the load per car is only about one-half of the average load of coal. The Southern Railway has shown that its average load of coke is from 22 to 25 tons per car, while its average load of coal is nearly 45 tons."

Under date of Aug. 18 the Vanadium Alloys Steel Company, Pittsburgh, announces that owing to the scarcity of ferrotungsten it has advanced its price on Red Cut Cobalt bars from $1.15 to $1.25 per lb. base, and on Red Cut Superior bars from $1.05 to $1.15. Treated bits made from the above steels are advanced respectively from $1.50 to $1.75 per lb. and from $1.25 to $1.50 per lb.

Iron-ore shipments from the Wabana mines in Newfoundland in 1914 by the two Canadian companies operating there were 639,430 net tons, of which 422,920 tons went to Sydney, Cape Breton, and 216,510 tons to the United States and Europe. In 1913 the shipments were 1,605,920 tons, of which 1,048,432 tons went to Sydney and 557,488 tons to the United States and Europe.

In an opinion handed down by the Maryland State Industrial Accident Commission it is held that parties interested in a claim for compensation cannot reach a private compromise agreement, but must abide by the rate of compensation determined upon by the commission.

Pittsburgh and Nearby Districts

The annual meeting of sales managers of the Republic Iron & Steel Company was held in Youngstown, Ohio, Aug. 24 and 25. Sales representatives were present from district offices in Philadelphia, New York, Chicago, Buffalo, Pittsburgh, Detroit, Cleveland, St. Louis, Cincinnati and Boston. The first day was taken up with sessions at which selling policies and plans for the next year were fully discussed, and that evening the sales managers were given a dinner by the officials. The second day was devoted to a trip of inspection of the company's plants in the Youngstown district.

Record time is being made in building the new open-hearth furnace at the plant of the Brier Hill Steel Company, Youngstown, Ohio. It is expected to be ready for making steel by Oct. 1.

C. M. Power, general sales manager, Standard Chain Company, Pittsburgh, has closed a contract with the Lighthouse Department, Tompkinsville, N. Y., for its chain requirements for the fiscal year 1915, which ends June 30, 1916, amounting to 1,000,000 lb. This is all high-grade chain.

The Andrews & Hitchcock Iron Company, Youngstown, Ohio, will start its rebuilt and enlarged No. 2 furnace this week, which has been out of blast for more than a year. About $500,000 was expended on it. New Mesta blowing engines have been installed, the old plate work replaced and additonal hot-blast stoves added. The William B. Pollock Company, Youngstown, Ohio, did all the plate work. No. 1 furnace of the company will be blown out as soon as No. 2 is started, and will be relined and repaired, to be ready for blast again about Nov. 1.

The Youngstown Iron & Steel Company, Youngstown, Ohio, is operating two of the three open-hearth furnaces in its new steel plant, and expects to start the third this week. All are 85-ton furnaces. The steel is being piled up, as the combination blooming and sheet-bar mill will not be ready for operation for about three weeks. This new steel plant is electrically driven throughout, contains some novel features, and is said to be one of the most complete open-hearth plants in the country.

The American Tar Products Company will greatly increase the capacity of its works at Crab Creek, Youngstown, Ohio. It takes the entire output of benzol made in the by-product coke ovens of the Republic Iron & Steel Company.

The board of education of Youngstown, Ohio, has been granted a permit to erect a forge shop at the South high school, which will be equipped with machinery for making small forgings.

The Sanitary Mfg. Company, Kenova, W. Va., has been incorporated with a capital stock of $300,000. It has acquired possession of part of the plant of the Independent Steel Company at Kenova, and will install a brass foundry and machine shop. It will be in the market for equipment for the new plant. The president is O. M. Bake.

The Martinsburg Power Company, Martinsburg, W. Va., is reorganizing as the Potomac Light & Power Company, and will expend $100,000 in improving its hydroelectric plants.

Fairmont, W. Va., plans the construction of a water system. Ira L. Smith is commissioner in charge.

The Duff Mfg. Company, Pittsburgh, manufacturer of the Barrett lifting jacks, is building an extension to the main factory building, 125 x 150 ft. With this extension the main building will be 625 ft. in length. A 5-ton bridge transfer crane and monorail conveying system is also being installed, together with considerable additional equipment.

The National Tube Company, McKeesport, Pa., has complained to the Pennsylvania Public Service Commission that a joint tariff of 20c. per ton on slag from its furnaces, charged by the Baltimore & Ohio, Erie and Pennsylvania railroads, is unfair. The company maintains that the railroads use the slag in their construction and maintenance work and, therefore, should not charge for its transportation. The Cambria and Jones & Laughlin steel companies also have signified their intention of intervening as complainants.

A State charter has been granted the Maguire Mfg. Company, Pittsburgh, with a capital of $5,000, to manufacture patented articles. The incorporators are F. R. Maguire, 1745 Coal Street, Pittsburgh; J. F. Courson, Pitcairn, and J. Bailey Brown, Pittsburgh.

The Union Coal & Coke Company, Pittsburgh, with a capital stock of $5,000, has been incorporated by R. T. Rossell, 1027 Carnegie Building, L. R. Martin and E. C. McHugh, all of Pittsburgh, to manufacture coke and by-products from coal.

The Mesta Machine Company, Pittsburgh, has thus far received orders for 128 complete air heads for blast-furnace blowing engines, containing multiported plate valves of the Iverson patent, and is now putting through its shops a large number of these air-heads for shipment to various furnace companies. Blowing engines equipped with these valves are claimed to be able to deliver the volume of air required with a minimum steam consumption.

The Wile Electric Furnace Company, Jenkins Arcade, Pittsburgh, has received an order from the Copper Clad Steel Company, Pittsburgh, with works at Rankin, Pa., for an electric furnace with a capacity of 12 tons per day; also an order for a 10-ton electric furnace for W. A. McKay, St. Johns, Newfoundland. It has just completed the building of an electric furnace for the Damascus Crucible Steel Casting Company, New Brighton, Pa., with a daily capacity of 16 tons, and an electric furnace for the Pittsburgh Steel Company, Monessen, Pa., with a daily capacity of 12 tons per day. The latter is now in operation.

The William Tod Company, Youngstown, Ohio, is making shell forgings for the Frankford Arsenal, Philadelphia, and also for shipment to Canada. It is adding to its equipment by installing more Tod high speed hydraulic presses, especially adapted for this work.

The George T. Ladd Company, engineer, Farmers Bank Building, Pittsburgh, has received a contract from the American Steel & Wire Company to install and equip about 1270 ft. of ore trestle track at its new zinc plant now being built at Donora, Pa., with the Simplex surface contact system. This requires no third rail, overhead trolley or storage battery, and further insures safety to employees. The transmission wires are placed underground, inclosed in conduit. Current is supplied to the moving locomotive or car from the conduited feeder cable by means of a contact box. Suspended beneath the locomotive is an electric shoe of such length that it reaches from one box to another. Other recent installations of this system are at the plants of the Wheeling Steel & Iron Company, Bethlehem Steel Company, Logan Iron & Steel Company, Lehigh Coal & Navigation Company.

Plans are now under way for a reorganization on a different financial basis of the Pittsburgh Coal Company. It is proposed to form a new company, which will issue bonds in place of the preferred stock and back dividends, the present charter preventing the retirement of the preferred stock. It is stated that arrangements have about been completed for the sale of a large tract of undeveloped coal land.

The Reeves Brothers Company, Alliance, Ohio, builder of heavy and light steel plate work, has received an order from the Republic Iron & Steel Company for three large self-supporting steel stacks for its two new open-hearth furnaces, and also for 93 charging boxes. Some time ago it built three blast-furnace stoves for the Republic Company. It also has on hand a considerable amount of rotary cement kilns and heavy plate construction for other concerns.

The Standard Steel Car Company, Pittsburgh, it is stated, has received an order for 75,000 shells for the Allies to be made at its works at New Castle, Pa., which have been turning out war munitions for some time.

James H. Nutt, Youngstown, Ohio, secretary of the Western Bar Iron Association, who has recently returned from a Western trip, states that bar-iron mills

in the West are operating to 60 per cent of capacity, as against 40 per cent some time ago.

It is stated that the Union Switch & Signal Company, Pittsburgh, has recently placed contracts for upward of $250,000 worth of machine tools. The company is turning out war munitions for the Westinghouse Electric & Mfg. Company, an identified interest.

Mackintosh, Hemphill & Co., builders of engines and rolling mill machinery, have taken a contract for a billet mill of the turn-over type for the United Steel Company, Canton, Ohio.

The Jones & Laughlin Steel Company, Pittsburgh, has placed a contract with the Alliance Machine Company, Alliance, Ohio, for 12 five-ton electric cranes and two large ladle cranes for its Aliquippa works. The ladle cranes will be used in the open-hearth steel department.

The Packard Motor Company has purchased a site in Pittsburgh, and will erect a three-story brick and stone building to cost upward of $300,000. It will be used for storing motor cars and supplies.

Claire furnace of M. A. Hanna & Co., Sharpsville, Pa., which has been idle for more than five years, is being relined and repaired, and may resume blast about Oct. 1.

The Valley Mold & Iron Company, Sharpsville, Pa., has placed a contract with the McMyler Interstate Company, Cleveland, Ohio, for the erection of a new steel building, 75 x 150 ft., to be used as a shipping department, and will soon place contracts for two other steel buildings, 75 x 150 ft. and 70 x 375 ft. It will install considerable new equipment in these buildings for the manufacture of ingot molds. The company states that its Alice furnace at Sharpsville will be ready to go in blast about Sept. 15 and will then be started if conditions in the pig-iron trade continue to improve. It is expected to make from 250 to 300 tons of iron per day.

It is stated that the Driggs-Seabury Company, Sharon, Pa., which has just taken over the Driggs-Seabury Ordnance Corporation, has received an order for 2,000,000 shells. It is also said to have large orders for automobile trucks and for various forms of ordnance, notably field guns. As yet no definite plans have been made for the large extensions to this plant, but they will probably be ready shortly. It is likely that a good part of the product of the company will be war munitions of various kinds.

OBITUARY

HENRY STEEL, one of the founders of the British steel manufacturing firm of Steel, Peech & Tozer, Ltd., Rotherham, Yorkshire, died at Sheffield, England, Aug. 3, aged 84 years. Harry J. Steel, Jr., of this firm is well known among steel men in the United States. For some years Henry Steel had not been actively associated with the business, but he was chairman of the company at the time of his death.

GEORGE F. RIDDELL, superintendent of the Chicago Heights mill of the Inland Steel Company, Chicago, died suddenly last week of heart failure. He had been with the company since the mill started in 1893, beginning as shipping clerk. He will be succeeded by Crawford B. Murtens.

DAVID LONGENECKER, for twenty-five years the Philadelphia representative of the Harrisburg Foundry & Machine Works, died Aug. 18, in the German Hospital, Philadelphia.

The Marting Iron & Steel Company, Ironton, Ohio, is making repairs to its blast furnaces at Lawrence and Ironton, and will put these two furnaces in blast early in September.

Emaus furnace of the Reading Iron Company, Reading, Pa., was blown in Aug. 19 after being idle about a year.

PERSONAL

J. L. W. Birkinbine, Philadelphia, has been appointed by the Secretary of the Interior as consulting engineer of the Bureau of Mines for the preparation of a monograph on the manufacture of iron and steel in the United States. Mr. Birkinbine's father, the late John Birkinbine, was at first appointed to this work and had completed the historical portion of it as well as the chapter dealing with early practice in the manufacture of charcoal pig iron.

F. W. Harbord, consulting metallurgist, London, has been appointed honorary advisor in metallurgy to the British Munitions Committee, and is now devoting his whole time to that work.

M. G. Leibin has been promoted from cashier to assistant treasurer of the Republic Iron & Steel Company, Youngstown, Ohio, and E. S. Douglas has been promoted from clerk to cashier.

Charles E. Duncan has been appointed superintendent of the rolling mills and axle plant of the Cambria Steel Company, Johnstown, Pa., to succeed J. C. Fox, resigned. Mr. Duncan has been identified with the Algoma Steel Corporation, Sault Ste. Marie.

Charles A. Sargeant, secretary, Domhoff & Joyce Company, Cincinnati, Ohio, has gone to the Pacific Coast for his vacation.

Marcus L. Filley, Eastern sales representative of the Deforest Sheet & Tin Plate Company, Niles, Ohio, is spending several weeks at Schroon Lake in the Adirondacks.

Edward E. Walker, superintendent of the Erie Malleable Iron Company, Erie, Pa., has been made vice-president of the company also.

Spencer Miller, Lidgerwood Mfg. Company, New York, and W. L. R. Emmet, consulting engineer of the General Electric Company, Schenectady, N. Y., have been nominated by the American Society of Mechanical Engineers as members of the Advisory Board being formed by Secretary of the Navy Daniels. Howard E. Coffin, vice-president and consulting engineer of the Hudson Motor Car Company, Detroit, and Andrew L. Riker, vice-president Locomobile Company of America, Bridgeport, Conn., have been nominated by the Society of Automobile Engineers.

Jones & Laughlin Company Buys Pig Iron

The Jones & Laughlin Steel Company, Pittsburgh, has purchased from a local interest 25,000 tons of basic iron for delivery over the remainder of the year. It is operating its steel plants in Pittsburgh and at Aliquippa to full capacity, and when doing this cannot make enough iron in its six Pittsburgh and its four Aliquippa furnaces to supply its needs. The iron is to provide against a possible shortage. The company has started its last idle furnace at Aliquippa and all four stacks are now in blast, making 2000 to 2200 tons of pig iron per day.

The Lake Erie Boiler Works, Buffalo, R. M. Fotheringham, general manager, in its plant at Perry and Chicago Streets, is installing a 150-ton hydraulic riveter, having a 12 ft. 6 in. gap, to operate under a working pressure of 2000 lb. to the square inch. It has a solid cast steel frame weighing 40,000 lb. It was built by R. D. Wood & Co., Philadelphia, and will be used in the construction of large marine boilers. The company now has a number of boilers in process for the Fore River Ship Building Company, Quincy, Mass.

The Minnesota Steel Company has just placed an order for forty-two Birkholz gas burners, suitable for the burning of coke-oven gas, with which it will equip its open-hearth waste heat boilers. The boilers may then be operated continuously and independently of the furnaces.

Machinery Markets and News of the Works

PERSISTENT LATHE DEMAND

More Planers Needed to Increase Output

Large Milling Machine Order—Additions to Remington Arms Plant—General Industrial Items Encouraging

Diversified industrial undertakings throughout the country all indicate that the machinery business is proceeding under good headway. Here and there it is reported that the demand for machine tools is slightly easier, but this is welcome, in some measure, because of the sold-up condition of the makers. Developments of an unusual character are lacking in all the markets, but activity is still very good.

Both New York and Cincinnati have felt the continued abnormal demand for lathes, needed in shell-making. An English engineer who came to this country on behalf of his government quickly determined that a lack of planer capacity was the restricting factor in lathe manufacturing. Around Cincinnati new firms are taking up the manufacture of lathes, some of them evidently intending to stay in the business permanently. Meanwhile tool builders are extending their plants. In New York a dealer sold 100 milling machines in one lot to a rifle manufacturer. The Seaboard Air Line is expected to proceed at once in placing orders against its list.

The Borough Council of Kenilworth, N. J., has authorized the closing of several streets which practically assures the location in that town of the American Can Company. The company has leased between 60 and 70 acres of land, and will erect a plant for the manufacture of munitions of war. That the company had taken a large contract of this kind already has been reported. It took an option on the Kenilworth land with the understanding that the street concessions would be granted. The people of the section are eager to have the plant because of the large number of employees it will bring to the borough.

The Remington Arms & Ammunition Company, Bridgeport, Conn., has awarded a contract for three more buildings, to cost $500,000 and to be ready for occupancy Dec. 1. At Greenwich, Conn., the Atlas Arms Corporation has been incorporated to manufacture and deal in military rifles.

From Cleveland it is reported that a number of Canton, Ohio, plants are expecting to receive Canadian war contracts. In Milwaukee it is said that several firms there have declined to take war orders, inasmuch as they already are busy enough. In that city the labor scarcity is more acute.

Business in Detroit has been a shade lighter, but it is still heavy, and there is especially good inquiry for medium-sized machine tools. The Foster Machine Company, Elkhart, Ind., is sub-letting to South Bend plants parts of its orders for turret lathes.

In the Central South machinery dealers are worried over the action of Great Britain in placing cotton on the contraband list, inasmuch as it may tend to restrict trade in their territory. Conditions in Birmingham are quiet. Business is improving in St. Louis. Texas reports that the recent disastrous storm did not damage the industrial plants. Around San Francisco trade is slow.

The Board of Trade of Ottawa, Canada, is considering the establishment of a shell plant to work for the government. Throughout Canada there appears to be a considerable amount of activity, with shell-making in the foreground more strongly than ever.

New York

NEW YORK, Aug. 24, 1915.

An English engineer who is in this country investigating the supply of lathes on behalf of his government quickly came to the conclusion that output here was more dependent on the planer capacity of American tool shops than on any other factor. That this is in large part true is demonstrated by the large number of planers which tool builders have bought since the rush started. Some of them have been glad to get second-hand planers. The demand for lathes is as great as ever. Representatives of England apparently want thousands of the machines, but are conducting their search quietly. Where they cannot get standard machines they are negotiating for tools of modified and simplified design, in fact, they rather prefer the latter for the reason that tools purchased now will in all probability be operated by unskilled labor, and only a few operations are expected from each machine. In the past week one company which makes several types of tools sold 500, mostly lathes, and on deliveries running to next April and May.

An exporting house of this city which sent out about 50 inquiries for lathes assembled a considerable group, and in some cases got machines from unexpected sources. Its success was due to the fact that a few manufacturers held lathes on which options had expired. For some time the leading builders have not been taking options, and the same success could not be had again. Several printing press manufacturers are contemplating the making of lathes, and some are understood to have already engaged in the work.

A local firm of dealers made a sale this week of 100 milling machines to be used in rifle manufacturing. Boring machines are in good demand, principally for the manufacture of gun carriages here and abroad. The Southern Munitions Company, which is backed by interests connected with the Alabama Interstate Power Company, Equitable Building, New York, has not purchased any machinery as yet, although it has made inquiry for shell-making tools. It is understood that the company wants a better price than has been prevailing for shells and will not take the business unless it gets the desired figure. The Eddystone Munitions Company has not yet placed expected orders.

With some sellers the week has been a little quieter, but they say they can well afford to sit back and take matters a little easy in view of their sold-up condition. A few domestic inquiries are coming out, and tool builders continue to buy. A pneumatic tool company has bought several large turret lathes for March delivery. The local jobbing foundries are much busier and could be doing more were they better equipped for machining. One foundry with which business has been very poor for many months is now operating about 60 per cent.

The Bethlehem Steel Company has purchased seven cranes from the Pawling & Harnischfeger Company, Milwaukee,

Wis., to be installed in one of its ammunition plants. The company is in the market for 12 cranes for a new mill it has under construction. The Fore River Ship Building Corporation has purchased 10 Niles cranes from the Niles-Bement-Pond Company. The Crucible Steel Company of America is now getting delivery on the several cranes it bought from the Morgan Engineering Company, Alliance, Ohio, for its new buildings at Harrison, N. J.

The Seaboard Air Line is scheduled to take action on its list this week.

The H. E. Best Company, 62 Vanderbilt Avenue, New York City, has been awarded the general contract for the construction of alterations to the factory of the Bergen Point Chemical Company, 116 x 225 ft., to cost about $30,000.

The Hudson Ice Company, 2848 Boulevard, Jersey City, N. J. has had plans drawn for the construction of a one-story tile ice-making plant, etc., to be erected at Central and Jefferson avenues at an approximate cost of $40,000.

The Mitchell Machine Company, Poughkeepsie, N. Y., is having plans prepared for an addition to its machine shop to cost approximately $7,500.

The Shepard Electric Crane & Hoist Company, Montour Falls, N. Y., is building an extension to its erecting shop, 80 x 110 ft.

The McClintic-Marshall Company, Pittsburgh, Pa., has received contract for and begun the erection of a blacksmith shop, 200 x 200 ft., at Jamestown, N. Y., for the Struthers-Wells Company, Warren, Pa., to cost about $50,000.

The H. C. Clausen Architectural Iron Company, East Seventy-fourth Street, New York, has increased its capital stock from $5,000 to $20,000.

The Silo & Implement Factory, Buffalo, has been incorporated with a capital stock of $15,000 to manufacture silos, feed cutters and other agricultural implements. Schuyler W. Scutt, F. A. Tucker and S. S. Evans are the incorporators.

In connection with its new passenger and freight terminals now in course of construction at Buffalo the Lehigh Valley Railroad has plans in preparation for large car repair shops and yards. They will be located at Tifft Street, Hamburg Turnpike and City Ship Canal and are to cost approximately $250,000.

Frank J. Offerman, manufacturer of advertising novelties, calendars, etc., 301 Broadway, Buffalo, is building a four-story addition to his factory at Broadway and Cedar Street.

The Delaware, Lackawanna & Western Railroad is in the market for a 42-in. wheel lathe and several small machine tools.

The N. W. Rogers Mfg. Corporation, Mount Vernon, N. Y., has been incorporated to manufacture engines, machinery, foundry and factory equipment, etc. Nelson W. Rogers, 506 South Ninth Street; E. W. Netsell and S. S. Smith are the directors.

Articles of incorporation have been filed by the Allan Herschell Company, North Tonawanda, N. Y., to manufacture park amusement devices. The company has a capital stock of $27,000. The directors are Allan Herschell and John Wendler, North Tonawanda, and F. W. Fritsche, Tonawanda, N. Y.

Philip Jerge & Sons, Buffalo, N. Y., have filed incorporation papers to manufacture farm implements. The capital stock is $20,000. Philip, Joseph, Edward C. and Philip P. Jerge, all of Elma, N. Y., are the incorporators.

The Crowther Motor Company, Rochester, N. Y., is having plans prepared by Walker, Livingston & Bracket, architects, of that city, for an automobile factory, 60 x 300 ft., one story, to be erected on a site just selected.

The Gorsline & Swan Construction Company, Rochester, has received the general contract for a boiler house and laundry building, 44 x 113 ft., to be erected by St. Mary's Hospital in that city.

The Auburn Button Works, Auburn, N. Y., have let the contract for a manufacturing building, 48 x 100 ft., two stories and basement.

McIntyre Bros. & Roundesbush, Inc., Fayetteville, N. Y., is receiving bids for a paper mill addition, 64 x 80 ft.

The Syracuse Rendering Company, Syracuse, N. Y., is taking bids for a fertilizer building, 75 x 190 ft., two stories.

Bids are being taken for a one-story foundry addition, 110 x 140 ft., to be made to the plant of the Syracuse Malleable Iron Works, Syracuse.

George W. Browyard, 267 Mill Street, Rochester, manufacturer of fireproof doors and windows, will erect a factory building, 100 x 100 ft., one story.

New England

BOSTON, MASS., Aug. 23, 1915.

It is reported that General Manager Frank F. Storms of the Page-Storms drop forge plant of the New England Westinghouse Company at Chicopee, Mass., has announced that the plant will be enlarged in the near future. It is expected that its size will be doubled.

The General Electric Company has awarded contracts approximating $100,000 for the construction of a reservoir, pipe line and pump house to furnish water for the sprinkler system of the Pittsfield, Mass., plant. The reservoir contract has been awarded to Gilbert Henry Harries, Boston, the pipe line contract to Daniel J. Walsh, Pittsfield, and the pump house contract to Rivers & Young, Holyoke.

Orange, Mass., plants are reporting brisk business, little of which is due to direct war orders. Most of the increase comes from good orders in the regular lines. Some of the shops are running nights.

The Cameron Car Company, Orange, Conn., has been incorporated in Connecticut with an authorized capital of $200,000 to make and deal in motor vehicles.

Work on the $50,000 wood-working shop at the East Springfield, Mass., plant of the New England Westinghouse Company has been begun by the Fred T. Ley Company of Springfield. The building will be one story, 150 x 350 ft., and is to be completed by Oct. 20.

The Atlas Arms Corporation, Greenwich, Conn., has filed articles of incorporation with a capital of $25,000, $10,000 paid in. It will manufacture and deal in military rifles. The incorporators are Ralph B. White and James A. Anderson, New York, and William J. Demarest, Newark, N. J.

The Charles G. Allen Company of Barre, Mass., is building an addition which will double the capacity of the foundry that it recently purchased of Leander S. Heald.

It is reported that the Blakeslee Drop Forging Company, Southington, Conn., will install 16 new drop hammers shortly.

The Remington Arms-Union Metallic Cartridge Company, Bridgeport, Conn., has awarded to the T. J. Pardy Construction Company the contract for three more large factory buildings. They are to be ready for occupancy by Dec. 1 and will cost about $500,000. Two of the buildings will be 60 x 240 ft., four stories, with wings 48 x 64 ft., and the third building will be 60 x 240 ft., two stories.

The Magee Furnace Company, Taunton, Mass., is increasing its capital stock from $125,000 to $250,000. Its new plant is expected to be ready for occupancy by Dec. 1.

The Vermont Marble Company is building a new lime plant at West Rutland, Vt. The building will be 435 ft. long and constructed entirely of cement. It will have one of the largest traveling cranes in the country, with a boom 85 ft. long.

Interests connected with the Barnes & Kobart Company, Southington, Conn., have formed a new company, it is reported, to manufacture an electric welding and riveting machine recently patented by Frank Kobart. It is stated that the new company has purchased a site in New Haven and will erect a factory. The Barnes & Kobart Company will continue in its present location.

Work will start Aug. 23 on several additions to the plant of the Bridgeport Brass Company on Housatonic Avenue, Bridgeport, Conn.

J. C. Rhodes & Co., Inc., manufacturer of eyelets, is building a three-story brick addition to its factory at 122 Front Street, New Bedford, Mass.

The Graton & Knight Mfg. Company, Worcester, Mass., has awarded a contract to Frederick W. Mark, Worcester, for an addition to its plant to cost about $50,000. The building will be of brick, steel and concrete, three stories, 67 x 200 ft. The work will be rushed as the plant is running overtime to keep up with its increasing domestic and foreign orders.

Work on the erection of an addition to the plant of the Bosch Magneto Company at Brightwood, Springfield, Mass., has been started by the Casper Ranger Construction Company, Holyoke. The building will be of brick, 170 x 200 ft., monitor roof, and will be used as a machine shop.

The New Departure Mfg. Company, Bristol, Conn., has let a contract for the erection of a one-story building, 127 x 252 ft., to house its grinding department. It is reported that the company is planning three additions to other departments.

The Hartford Automobile Parts Company, manufacturer of universal joints and clutches, Hartford, Conn., is seeking a new location in that city. It is one of the four tenants of the west armory of the Colt's Patent Firearms Company

plant which must find new quarters by Oct. 1. The company employs 250 hands and has been running on a 24-hr. schedule for some time. It has received advantageous offers to locate elsewhere but will remain in Hartford if suitable arrangements can be made immediately.

The Hugo Mfg. Company, Hartford, Conn., is a new corporation, with an authorized capital of $50,000, which will engage in the manufacture of a new clamp for wood-workers. The company is planning to build at once a brick factory on Franklin Avenue. Hugo Steuernagle is president; Charles D. Ryder, vice-president, and George O. Allan, secretary and treasurer.

There is an unconfirmed report that the Housatonic Power Company, a subsidiary property of the New York, New Haven & Hartford Railroad Company, has been sold to parties who intend to use the Bull's Bridge plant at New Milford, Conn., to secure power for a large factory.

The United States District Court, Boston, has granted an extension of time to Sept. 16 for the payment of $700,000 of the purchase price of the plant of the Pope Mfg. Company at Westfield, Mass. The plant was sold by the receivers July 20 to Wilbur C. Walker of Hartford and Scott C. McLanahan of New York and the final payment was due Aug. 18. The buyers claimed that more time was necessary to look up the title to the real estate and obtain necessary signatures. Mr. Walker is quoted as stating that the name of the company will be changed to the Westfield Mfg. Company, to which the Massachusetts Commissioner of Corporations has issued a certificate of incorporation. The authorized capital is $1,200,000. The new corporation will manufacture motor vehicles. The incorporators are Richard Mortimer, Jr., Walter E. Cooke, James B. Donovan and Richard B. Gregg.

The Charles C. Lewis Company, Springfield, Mass., is a new corporation with a capital of $75,000. It will deal in steel and hardware. Irving H. Page and Charles A. Bemis are the incorporators.

Philadelphia

PHILADELPHIA, PA., Aug. 23, 1915.

The Philadelphia Belting Company, 313 Vine Street, Philadelphia, Pa., has taken over a new factory, which it will occupy Sept. 15 for the manufacture of leather belting.

The Colebrookdale Iron Company, Pottstown, Pa., whose plant was damaged by fire in a recent heavy storm, resumed operation Aug. 18.

The Collings Carriage Company, Camden, N. J., received bids Aug. 19 for alterations and additions to its factory.

The Sheldon Axle Company, Wilkes-Barre, Pa., is increasing its output of worm drive motor truck axles by the installation of new machinery and special equipment. After the additions are completed, it expects to treble its output. George M. Wall is general manager.

The recent order placed by the Maxwell Automobile Company with the Lee Tire & Rubber Company, Conshohocken, Pa., was for 48,000 tires, not $48,000 worth, as has been reported.

The Armstrong Cork Company, Lancaster, Pa. has had plans drawn for a two-story and basement steel and reinforced concrete factory 94 x 220 ft., to be erected at Camden, N. J., at an approximate cost of $85,000. Henry Boettcher is the architect.

The Reading Casting Company, 1432 Mulberry Street, Reading, Pa., manufacturer of gray-iron castings, has purchased the business and plant of the Gray Iron Company, of that city, for more than $14,000. H. C. Bell, secretary and treasurer of the Reading Company, has purchased the half interest in the Iron Company owned by A. L. Frame, otherwise there will be no change in the latter company's organization. Its plant is now running to capacity with a force of 45 men.

The Power City Motor Car Company, Hazleton, Pa., with a capital stock of $5,000, has been incorporated by Harry M. Benjiman, W. C. M. Butler, Charles J. Kirchman and Harry H. Collinson, to manufacture motor vehicles.

The Elizabethtown Planing Mill, Elizabethtown, Pa., owned by Abraham and Jacob Hoffer, has been destroyed by fire with a loss of $35,000.

The Atlas Powder Company, Wilmington, Del., has purchased the plant of the Nitrate Products Company, Mt. Carbon, Pa., and will continue its operation under the name of the Atlas Nitrate Products Company.

The Titan Metal Company, Bellefonte, Pa., with a capital stock of $100,000, has been incorporated by F. E. Naginey and others to manufacture metals and metal products.

The new factory of the Aetna Explosives Company, near Newton Hamilton, Pa., commenced to manufacture powder last week. The grounds on which it is located cover 425 acres and are surrounded on three sides by the Juniata River. A branch of the Pennsylvania Railroad runs into the inclosure. The factory has its own filter system and a hospital with a physician and nurse constantly on duty. When running full time its capacity will be 50,000 tons of powder a day.

The Steiff Motor Company, Shamokin, Pa., with a capital of $10,000, has been incorporated by M. G. Steif, 522 North Shamokin Street; John W. Timmer and M. L. Cunneen.

The Cuban Lehigh Company, with a capital stock of $15,000, has been granted a Pennsylvania charter to mine, smelt and refine iron and copper in Cuba. The incorporators are J. Thomas Schantz, Young Building, Hamilton Street, Allentown, Pa.; Allen C. Dodson, Natt M. Emery and Philip J. Byrne of Bethlehem.

The Duplex Metallic Company, Margaret and Bermuda streets, Philadelphia, has been incorporated with a capital of $200,000 by Alfred S. Wright, 1118 Chestnut Street; Andrew J. Downes, 5624 Carpenter Street, and Samuel Scheetz, 1919 Wallace Street, to manufacture metal products.

Baltimore

BALTIMORE, MD., Aug. 23, 1915.

Orders for munitions of war still hold attention in this territory. Several additional firms which have hitherto taken none of the work have entered the field and additional machinery will have to be installed in their plants. Others are considering taking such orders and it looks as though many more Baltimore shops will be doing this work in the near future. The scarcity of skilled mechanics to handle this character of work is becoming a rather serious problem and is causing employers a great deal of worry.

The largest contract for shrapnel to come to Baltimore will probably be closed within the next few days by the Spedden Shipbuilding Company, Boston Street and Kenwood Avenue, of which George A. Dean, Jr., is superintendent. The contract is said to total nearly $32,000,000. It will not be closed until the firm can arrange to sublet some of the work. The shipbuilding plant will have to be overhauled and refitted with proper machinery to carry on the work.

A contract for the iron and steel parts for 700 motor trucks and the same number of trailers has been received by the Baltimore Malleable Iron & Steel Casting Company, Charles and Wells Streets, Baltimore, of which Joseph P. Kennedy is president. The vehicles will be assembled in Philadelphia. But few additions will have to be made to equip the plant for this work.

Application to construct a one-story boiler house and electric power-plant building has been made by the Bartlett-Hayward Company, Scott and McHenry Streets, Baltimore, which has an immense war order. The building will be of fireproof construction and will cost about $4,000.

An order for a large number of aeroplane propeller blades for the Allies has been offered E. H. Poole & Co., machinists, 1513 Orleans Street, Baltimore, and if it is accepted the present plant will have to be enlarged.

The Poole Engineering & Machine Company, Woodberry, Md., which has large war orders, is planning the construction of a machine shop and foundry, 100 x 800 ft. S. Proctor Brady is president of the company.

A rumor has been circulated that an out-of-town company with a large war order is trying to purchase the plant of the Baltimore Car Wheel Company, Fulton Station, Baltimore, which has been idle for about five years. W. S. G. Baker, president, denies the report.

New machinery will have to be installed and additions made to the plant of the E. J. Codd Company, 700 South Caroline Street, Baltimore, to fill an order for shrapnel cases.

The Detrick & Harvey Machine Company, 508 East Preston Street, Baltimore, Md., recently purchased by the Bethlehem Steel Company, has been taken over by the latter. A. D. Mixsell, vice-president of the Bethlehem Company, has been made president of the Baltimore company, the name of which will not be changed. The other officers are: Vice-president, W. F. Roberts; vice-president and general manager, J. W. Neidhardt; secretary-treasurer, B. H. Jones; auditor, F. A. Shick. The manufacture of machine tools and general machine-shop products will be continued as in the past. A statement issued in Baltimore is to the effect that ammunition will not be manufactured at the plant and no extensions are planned at this time.

The plant which will be erected near Baltimore for the manufacture of gun cotton by the Spanish-American Trading Syndicate, Inc., of Delaware, will cost in the neighborhood of $150,000. Leon Rasst, 1902 Eutaw Place, vice-president and treasurer, and Baltimore representative of the syndicate, expects to close negotiations for the site this week.

The plant of the American Distributing Company, New York City, to be erected at Curtis Bay, Md., it is stated, will

consist of a fermenting house, 95 x 188 ft.; a rectifying and wine room, 100 x 239 ft.; distilling building, 61 x 149 ft.; drying out and cistern room, 95 x 162 ft.; cooperage building, 75 x 221 ft.; denaturing building, 82 x 181 ft.; warehouse, 185 x 191 ft., and blacksmith shop, 40 x 69 ft. All the buildings will be of concrete construction. The details are being handled from the New York office.

Machinery is being installed in the new plant of the Davison Chemical Company, Curtis Bay, Md., which has large acid orders from the DuPont Powder Company. Work will be started next month. The other plants of the company are operating day and night.

Henry Grauer, Belair Road and Erdman Avenue, Baltimore, has asked permission to use the premises as a woodworking factory and lumber yard and install motors.

The Breuckmann-Abrahams Electric Company, Keyser Building, Baltimore, has been incorporated with $25,000 capital stock by A. C. Breuckmann, Edward S. Abrahams and Ralph C. Sharretts.

New shops to cost about $500,000 will be constructed at Portsmouth, Va., by the Seaboard Air Line Railway.

With F. W. Tucker, Jr., as secretary, the Hanover Garage & Repair Company, Ashland, Va., has been incorporated with $10,000 capital stock.

South Boston, Va., has voted $100,000 for waterworks, etc.

The Gyro Metal Works, Norfolk, Va., is planning a fireproof garage and machine shop to cost about $14,000.

A plant for the manufacture of office desks, cabinets, etc., is planned by the Business Equipment Corporation, Port Norfolk, Va., which was recently incorporated with $15,000 capital stock. J. A. Levick is the president.

Plans are under way to put the former Roach shipyards, Chester, Pa., into operation within two months. The property has been taken over by the Chester Shipbuilding Company, recently incorporated in New York with $1,500,000 capital stock. The incorporators are G. F. Jebbett and F. H. Butehorn, New York City, and T. S. Buckingham, Brooklyn, N. Y.

The American Dyewood Company, Chester, Pa., which has doubled its business since the European war began, will build a large addition. The company estimates that with this enlargement of the factory, and speeding up the apparatus throughout the plant, it will be able to increase its output at least 50 per cent.

Plans for another large building at the plant of the General Chemical Company, Marcus Hook, Pa., are under way.

The Frederick Iron & Foundry Company, Frederick, Md., is reported in the market for considerable machinery for use in filling a large order for steel castings.

The Mountain City Garage Company, Frederick, Md., has been formed with M. E. Kefauver as president. It will be capitalized at $25,000 and a modern plant established. Plans now are under way for a fully equipped machine shop. H. M. Cramer, formerly connected with the American Foundry & Mfg. Company, Frederick, is manager.

Chicago

CHICAGO, ILL., Aug. 23, 1915.

An interesting development that follows as a natural consequence of the scarcity of lathes of all descriptions is the demand for cylindrical boring machines. Sales of this type of equipment in the past few weeks have practically exceeded the immediate supply. The nature of going business is still preponderantly a war demand. Dealers in machinery state that regular customers except where they may have taken on some of this special work are buying little or nothing. The satisfying of railroad inquiry, which in the case of a large proportion of earlier lists was postponed because of price advances, is still in abeyance, although occasional inquiry for single tools is noted. November and December delivery of that class of tools for which the demand has been greatest appears to be the best service obtainable. Except for high speed heavy duty drill presses, drilling machinery is moving very slowly.

The Commonwealth Edison Company's Harrison Street station, Chicago, the site of which has been purchased by the Union Station Company, is to be dismantled at once and the machinery sold.

The Cole Motor Company, Chicago, Edgar C. Frady, president, has arranged for the construction of a four-story service building at 2326 Indiana Avenue, to cost $70,000.

The Chicago Loop Garage Company, through Henry J. McMullen, architect, has had plans prepared for a public garage, 90 x 96 ft., at a cost of $30,000. W. G. Young is building a one-story garage at Fifty-ninth Street and Calumet Avenue, and R. I. Leffingwell, Evanston, Ill., is about to erect a one-story public garage at a cost of $6,000.

The Fitzsimmons Steel & Iron Company, Chicago, is contemplating the erection of a one-story factory, 100 x 200 ft., in Milwaukee.

The foundry and grinding room of the Blake Specialty Company, Rock Island, Ill., destroyed by fire a few weeks ago, will be rebuilt.

The Midland Accessories Mfg. Company, Vandalia, Ill., has been incorporated with a capital stock of $150,000. The corporation is a reorganization of the St. Louis Auto & Valve Company and will erect a plant at Vandalia costing $50,000.

Philip F. Carroll, president and general manager of the Grocers' Baking Company, has purchased the plant and equipment of the Joliet Machine & Foundry Company, Joliet, Ill.

The Burd Ring Company, Rockford, Ill., manufacturer of high compression rings, will build a new factory, 140 x 140 ft., which it expects to have finished in about four months.

The Lake Erie & Western Railroad Company is to build a new machine shop at Tipton, Ind.

The Edwards Valve & Mfg. Company, East Chicago, Ind., is completing an addition to its plant, 40 x 260 ft. The original plant of this company was completed only last year and the extension at this time is understood to represent not only a good demand for the valves which the company makes but the receipt of an order for munitions.

The Hamilton-Beach Company, Racine, Wis., expects to start work at once on a new fireproof factory which will contain quarters for an office, machine shop, assembling room, shipping room, etc.

The plant of the Tiger Drill Mfg. Company at Beaver Dam, Wis., was sold to James B. Day of Hartford, who represented L. Rosenheimer of Kewaskum.

The plant of the Consumers' Power Company at Shiawassee, Mich., which was recently destroyed by fire, will be immediately rebuilt.

The Duluth Mfg. & Welding Company, Duluth, Minn., has been incorporated with a capital stock of $50,000 by J. M. McDonald, S. S. Miller, Philip J. Frost, Leonard Husband and A. R. DeVohn.

The Superior Mfg. Company, Creston, Iowa, has been organized by M. F. Black, George Beckwith, Harry Rex and Harry Trump, to manufacture scrapers and road machinery. The company has a capital of $10,000.

The Aurora Steel Products Company, Aurora, Ill., has been incorporated with a capital stock of $14,500 by Axel Nelson, A. R. Carlson and D. R. Furnas and will equip a metal-working plant.

Detroit

DETROIT, MICH., Aug 23, 1915.

In some quarters it is reported that business in the machine-tool line has been a shade less active, but underlying conditions are firm and there has been a fair run of orders. Inquiry continues strong, principally for medium sized metal-working tools. The demand for wood-working machinery is light. Machine shops doing a jobbing business have good bookings and most shops are operating at capacity. The situation in the foundry trade shows little change. New construction work is of minor importance.

The Northway Motor & Mfg. Company, Detroit, has under way two new manufacturing buildings and is planning the erection of a third new structure. The additions will double the size and capacity of the company's plant.

The Brown-McLaren Mfg. Company, Detroit, has been incorporated with $25,000 capital stock by Ralph C. Brown, John P. McLaren, Alfred R. Smith, and others. The company will manufacture machinery and screw machine specialties.

The Hancock Mfg. Company, Charlotte, Mich., furniture manufacturer, is completing an addition to its plant and is installing more equipment.

The Henry Rowe Mfg. Company, Newaygo, Mich., has purchased the two buildings comprising the plant of the Hunt-Buse Mfg. Company. The new quarters will enable the company to double its present output. The company manufactures a line of woodenware specialties.

The Simon Sales Company, Saginaw, Mich., is constructing a large garage and repair shop. The building will be 108 x 120 ft., two stories.

F. E. Day, Mancelona, Mich., has broken ground for the erection of a butter process factory, 40 x 100 ft., three stories. The building will be completely equipped with modern machinery.

The Holland St. Louis Sugar Company is erecting a large pulp-drying house at its St. Louis, Mich., plant.

The saw and shingle mill of the South Shore Cedar Company, Dollarville, Mich., has been destroyed by fire, entailing a loss of $17,000. The mill will be rebuilt at once.

The Organic Chemical Company, Wyandotte, Mich., has been organized by Walter Hass, John Livingston and Paul Sorge to manufacture aniline dyes. The new company has secured factory quarters and will begin operations shortly.

The Central States Tanning & Belting Company, Niles, Mich., has been organized to manufacture leather goods and belting. George O. Thomas is at the head of the new company. A factory is now being arranged for.

The Francisco-Martin Motor Company, Newport, Mich., has been incorporated with $30,000 capital stock to manufacture automobiles. The incorporators are George W. Francisco, Leo J. Martin and Frank B. Scholl. It is stated that the company will erect a factory at Newport.

The addition being erected by the Detroit Wire Spring Company, Russell Street, Detroit, Mich., will be four stories, of reinforced concrete, 98 x 400 ft., and will have a capacity for equipping 6000 automobiles per 10-hr. day.

The Kramer Governor Company, Detroit, Mich., has been incorporated with a capital stock of $100,000 to build engines and machinery. The incorporators are J. W. Anderson, H. E. Billau, Max Gessler and others.

Milwaukee

MILWAUKEE, WIS., Aug. 23, 1915.

One of the striking features of the local situation is the number of metal-working shops which are declining direct or indirect orders for war munitions. Reports come almost daily of a large producer refusing to prejudice regular business by taking on war contracts. Machine-tool builders continue production on an unprecedented scale and as yet see no sign of a let-up in the demand. Plant extensions are being hastened to give the desired relief. Business in other lines is now picking up at a more rapid rate. Agricultural machinery production, which slumped badly during the early summer after a busy spring, is resuming activity due to the bumper grain crops now being harvested. Labor of all kinds is growing scarcer, while skilled workmen are not to be had. Twice as many patternmakers in both wood and metal could be used if available. This part of the country has been singularly free from labor troubles through the entire revival and this situation is the cause of much good feeling.

The Bucyrus Company, South Milwaukee, Wis., has reached full-time schedule as the result of new business booked in the last three or four weeks. The principal source of business is special machinery for Europe and coal-mining machinery for America. While 1915 railroad business is in excess of the 1914 volume, it is below that of previous years.

The Automatic Jack Company, Cedarburg, Wis., has been organized to manufacture lifting jacks and other automobile and factory specialties. The capital stock is $25,000 and the incorporators include J. R. Thill, E. J. Groth and M. N. Green.

The Fox River Paper Company, Appleton, Wis., is preparing to buy considerable new equipment, including a new 86-in. paper mill.

The Sterling Wheel Company, formerly T. S. Wheel & Mfg. Company, 245 Oregon Street, Milwaukee, is building its own plant at Eighth and Oklahoma avenues and will move about Sept. 15. Only a small list of new equipment is being purchased, the present outfit being nearly adequate. The company makes resilient ball-bearing wheels for automobiles and does custom work in automobile and machinery parts. Theodore J. Smulski is superintendent.

The Hamilton-Beach Company, Racine, Wis., manufacturing various electric appliances, including vibrators, beverage mixers, telephonic apparatus, etc., is awarding contracts for the erection of a brick and steel factory building on High Street and the Chicago & Northwestern tracks. The company is now occupying part of the buildings of the F. J. Greene Engineering Works, but recently was obliged to lease additional factory space from the Racine Stool Company. The Greene Works is also crowded for room.

Smart Bros., Eagle, Wis., have purchased a site at Wisconsin and Park streets, Burlington, Wis., and will erect a garage and machine shop.

The Geuder, Paeschke & Frey Company, Milwaukee, tin, sheet-iron and enameled products, has purchased the plant and business of the National Blower Works, Milwaukee, to provide much-needed room. The National plant adjoins the Geuder works at Sixteenth Street and St. Paul Avenue and is fully equipped for sheet metal work, having now devoted its attention to the production of ventilating and blower systems. It employed 200 workmen, all of whom are retained by the Geuder company. A small list of special machinery is being purchased.

The Gerlinger Steel Casting Company, Fifty-ninth and National avenues, Milwaukee, has increased its force nearly 30 per cent since Aug. 1 and expects to be able to adopt a full-time schedule before Sept. 1.

The Tiger Drill Mfg. Company, Beaver Dam, Wis., farm implements, which became involved in financial difficulties early this year, has been sold to James B. Day, Hartford, Wis., representing L. Rosenheimer, Kewaskum, Wis., who is reported to be intending to reopen the plant at once.

The Giddings & Lewis Mfg. Company, Fond du Lac, Wis., is working day and night on a special order for 100 standard lathes. Two 12-hr. shifts are engaged on this and an exceptional lot of orders from usual channels.

The Globe Seamless Steel Tubes Company, Milwaukee, is working double shift on new business coming principally from domestic sources. An extraordinary demand for boiler flues, automobile tube shafting, steering gears and threshing machine tubes is being experienced.

Articles of incorporation have been filed by the Flambeau River Power Company, Ashland, Wis. The capital stock is $50,000 and the corporators are A. E. Appleyard, E. J. Shaylor and G. A. Appleyard. The company will develop extensive water power holdings.

The city of Marquette, Mich., is preparing to build a new high school and has engaged John D. Chubb, architect, 109 North Dearborn Street, Chicago, to prepare plans. The building will cost $120,000 and contain a complete manual training department.

The Macomber & Whyte Rope Company, Chicago, which established a large plant at Kenosha, Wis., several years ago and concentrated its production at that point a short time ago, has moved its general offices to Kenosha. At the same time it is announced that F. B. Macomber, secretary and manager of the company, has retired and the complete control has passed to George S. Whyte, president, who has been in charge of production at Kenosha. Formerly there were two other plants, one at Coal City, Ill., and the other at Fostoria, Ohio. The company is now one of the largest manufacturers of wire rope and cable in the country. John W. Johnson continues as treasurer of the company.

William Van Lieshout, Kaukauna, Wis., will build a fireproof garage and machine shop.

The Prange Motor Company, Sheboygan, Wis., has been organized by August Prange, Fred Voigt and Thomas Femmel, all until now associated with the Sheboygan Auto & Supply Company. It is building a garage and machine shop.

Indianapolis

INDIANAPOLIS, IND., Aug. 23, 1915.

Following the most prosperous year of its existence, the Haynes Automobile Company, Kokomo, Ind., has declared a 20 per cent cash dividend for the year ended June 30, 2 per cent cash dividend for the month of July and 100 per cent stock dividend. For August a 1 per cent cash dividend has been declared on the new capitalization of $1,200,000. The capacity of the plant, with the additions to be built, will be fifty cars a day of ten hours, double the former output.

The General Service Company, Lafayette, Ind., is making plans for the construction of a condensing plant to cost $150,000, with the equipment to cost also $150,000.

The Van Briggle Motor Device Company, Indianapolis, has been incorporated with $150,000 capital stock, to manufacture a carbureter. The directors are L. H. Van Briggle, Henry S. Rominger and Z. F. Harshberger.

The Hytee's Factories, Indianapolis, has increased its capital stock from $25,000 to $50,000.

The Dice Machine Company, Anderson, Ind., has been incorporated with a capital stock of $10,000 by T. C. Werbe, Spencer Hickman and E. F. Dice, to manufacture engines and motors.

The Blount Plow Works, Evansville, Ind., is having plans prepared for new works which will cost about $200,000.

The Tell City Planing Mill Company, Tell City, Ind., has been organized with a capital stock of $40,000 and will be in the market for wood-working equipment.

The Board of Public Works, Fort Wayne, Ind., is conferring with Irwin S. Osborn of Cleveland, sanitary engineer, regarding plans for a new garbage-disposal system.

Word from Arthur Shaw, representative at Petrograd, Russia, of the Remy Electric Company, Muncie, and the Studebaker Automobile Company, South Bend, is to the effect

that there is a lively scramble among representatives of American manufacturers to obtain war orders, and that they are virtually monopolizing the Russian market.

The Jasper Manufacturing Company, Jasper, Ind., has been incorporated with $40,000 capital stock to manufacture furniture. The directors are J. John, A. M. Bohnert and L. J. Eckstein.

The Hamilton County Concrete Gravel Company, Noblesville, Ind., has been incorporated to manufacture road material, with $60,000 capital stock. The directors are David Allerdice, C. F. McGreevey and H. H. Fall.

The Electric Testing & Engineering Company, Evansville, Ind., has been incorporated to manufacture electrical appliances and supplies, with $10,000 capital stock. The directors are R. R. Winklepleck and C. W. Wolfe, Evansville; C. W. Schlemmer, Cannelton, and G. H. Hauser, Indianapolis.

The Brook Utilities Company, Brook, Ind., has been incorporated to operate a waterworks plant, with $25,000 capital stock. The directors are J. B. Lyons, Jr., J. D. Rich and T. L. Davis.

The board of commissioners of Montgomery County, meeting at Crawfordsville, Ind., will receive bids Sept. 7 for a steam roller with scarifier attached. B. B. Engle is auditor.

The board of commissioners of Daviess County, meeting at Washington, Ind., will receive bids Sept. 11 for furnishing a 10-ton road roller with scarifier and one double-cylinder steam engine, not less than 18 hp., and one tank wagon with sprinkler attached. Lew S. Core is auditor.

The C. G. Conn Company, Ltd., Elkhart, Ind., has been recently re-incorporated. It manufactures musical instruments. The new officers are C. D. Greenleaf, Wauseon, Ohio, president and treasurer; G. B. Cuthill, Wauseon, vice-president and assistant treasurer; James F. Boyer, Elkhart, secretary. Mr. Greenleaf bought practically all of C. G. Conn's interest. The new corporation has $1,000,000 capital stock.

The Foster Machine Company, Elkhart, Ind., has obtained a war contract amounting to $1,000,000. It is principally for turret lathes. Much of it has been sublet to plants at South Bend, Ind.

Cleveland

CLEVELAND, OHIO, Aug. 23, 1915.

It is reported in Canton, Ohio, that manufacturers there will be awarded sub-contracts for various war munitions. It is stated that D. A. Thomas, the special commissioner of the British War Department will be in Canton soon to handle the letting of them.

The Standard Welding Company, West Seventy-sixth Street, Cleveland, Ohio, is pushing the construction of the addition to its plant, 100 x 200 ft. to be used for the manufacture of bent tube parts. It will build a second addition, ell-shaped, one section 200 ft. long and the other 240 ft. long, five stories, the top floor to be used for offices. At a later date two more additions will be constructed.

The new company which has purchased the plant of the New Era Engine Company at Dayton, Ohio, has taken the corporate name of the Manufacturers Production Company, not the Consolidated Mfg. Company, which was reported. The latter style was at one time considered, but was discarded for the former.

The Kessler Company, manufacturer of chemicals, 1000 Newburg Avenue, Cleveland, plans to build an addition at a cost of about $14,000.

The Williams Foundry & Machine Company, manufacturer of clutches, Akron, Ohio, has taken out a permit for the construction of a two-story brick and steel addition, 92 x 135 ft., to cost about $15,000.

Work has been started on the erection of an addition to the plant of the Hinde & Dauch Paper Company, Railroad Street, Sandusky, Ohio, to cost about $14,900. It will be of steel and tile, one story, 62 x 400 ft., and will be used for a machine shop and warehouse. The Samuel Austin & Son Company, Cleveland, is the builder.

The Cleveland-Ford Tire Company, Cleveland, Ohio, will erect its factory at the foot of Benefit Street, Cleveland, not Ashtabula, as has been reported. Work will start within a few days. W. C. Owen & Co., 449 Leader-News Building, the architects, have drawn plans for a main building, 46 x 300 ft., two stories and basement, with a wing 50 x 60 ft., and a one-story powerhouse 40 x 100 ft., all of brick and reinforced concrete. The plant will be erected in two sections, the second to be started when operations are begun in the first. The company has elected the following officers: president, James L. Smith; vice-president, P. C. Remick; secretary and treasurer, Walter J. Leinbach; and general manager A. E. Pearce.

The Cleveland Electro Metals Company, West Twenty-sixth Street, Cleveland, has bought the property of the Steiger Mfg. Company, West Thirty-eighth Street and Nickel Plate Railroad, on which it will build a manufacturing plant.

It is announced that the financing of the West Ninth Street freight terminal in Cleveland has been completed and that its erection will commence shortly. Plans for a freight unloading system and warehouse, to cost $1,000,000, have been prepared by Fulton & Taylor, architects, Permanent Building, Cleveland.

The Greentown Aluminum Company, Greentown, Ohio, will build a one-story factory building, 36 x 114 ft. Plans are being prepared by W. C. Owen & Co., Leader-News Building, Cleveland.

The Williams Foundry & Machine Company, Akron, Ohio, will build a two-story brick addition to its machine shop, 90 x 125 ft.

It is reported that the Elyria Machine Company has been incorporated with a capital stock of $10,000 by R. A. Green and T. L. Hirt, Elyria; Thomas R. Baird, E. A. Peters, E. W. Conrad and C. De Witt, all of Cleveland. W. D. Browning, Cleveland, is also connected with the new company, which has purchased the plant of the Elyria Gas Engine Company, Elyria, which it will use for the manufacture of shrapnel for which it is said to have secured a large order.

The Mohawk Rubber Company, Akron, Ohio, plans to erect an addition, two stories, 43 x 61 ft., to cost about $5,000. Early in the summer it was granted a permit to build a four-story building.

It is rumored that the American Hard Rubber Company, Akron, Ohio, whose plant is practically surrounded by the buildings of the B. F. Goodrich Company, manufacturer of rubber, has secured option on property elsewhere in Akron where it may build. It is known that the Goodrich Company would be glad to secure the American Company's present plant.

Myers Brothers, Canal Dover, Ohio, have purchased an interest in the Dennison Foundry & Engineering Company, Dennison, Ohio, manufacturer of heating furnaces, of which Oliver Myers will be general manager.

Amos W. Gardiner and John J. Gardiner, Toledo, Ohio; Douglass L. Gardiner, Cleveland, and R. P. Hull, Toledo, have purchased a half-interest in the Consolidated Car Company, automobile manufacturer, Detroit Mich. Mr. Hull will become treasurer: Amos W. Gardiner, secretary, and Douglass L. Gardiner, sales manager.

The Independent Tack Company, which now occupies one of the former General Electric Company Buildings at Fostoria, now controlled by the Fostoria Factories Company, will begin operations within a few days. S. G. Catchpole, general manager and superintendent, has returned from Cleveland to take charge.

The Seneca Mfg. Company, Fostoria, Ohio, will resume operations after a two-weeks' shutdown, during which many minor improvements were made.

The Wayne China Company, Wooster, Ohio, will be incorporated with a capital stock of $200,000 by the Mauger-French interests of Massillon, to manufacture chinaware. It is considering the construction of a pottery, 80 x 400 ft., to employ over 150 men.

It is stated that offers have been made to cutlery manufacturers in Freemont, Ohio, for the manufacture of bayonets. The Christy Knife Company, the Clauss Shear Company and the Jackson Shear & Razor Company have been mentioned in this connection.

Cincinnati

CINCINNATI, OHIO, Aug. 23, 1915.

Lathe builders are not yet able to satisfy the foreign demand for machines, and almost every week information comes to light of new firms entering the field. The latest company to embark in the business is located at Columbus, Ohio. Several local lathe builders are figuring on extensions to their plants. While machine-tool manufacturers are not turning down foreign orders that they can fill, they are exercising care in supplying domestic customers. This action on the part of the new additions to the lathe manufacturing field indicates that the new firms are making plans to continue in the business after the present foreign demand lets up. A prominent machine-tool builder estimates that lathe builders in the Central West are sold up to Feb. 1, 1916, basing this general average on reports received from different sources. Milling machine manufacturers are also booked ahead, and lately there has been a better demand for shaping machines. The foreign inquiry for radial drilling machines is also on the mend, but not much domestic business is reported.

The unprecedented demand for machine tools from Europe has caused many manufacturers to overlook the possible market for machine tools in South America. While it is admitted that orders from this source would be mostly for single tools, government foreign trade representatives who have recently visited Cincinnati have convinced local manufacturers that the total business to be obtained is worth going after.

The jobbing foundries are all operating to full capacity, but the stove makers are passing through a very dull period. An improvement is noted in the call for portable electric grinding and drilling machines.

The Acme Machine Tool Company, Cincinnati, turret lathe maker, is having plans prepared for an addition to its plant on Buck Street.

The Greaves & Klusman Machine Tool Company, Cincinnati, lathe builder, will make a one-story addition to its plant that will be 30 x 120 ft., of steel and brick construction.

The Cisco Machine Tool Company, Cincinnati, which recently acquired the lathe plant of the Von Wyck Machine Tool Company, in Cumminsville, will make two additions to the plant, one an engine room 22 x 30 ft., and the other a tool storage structure, 15 x 30 ft., both of brick construction. G. Mil Horten is general manager of the company.

The Success Mfg. Company, whose Cincinnati office is in Blymyer Building, has established a main office and factory for the manufacture of horseshoe calks at 5 East Fifth Street, Newport, Ky.

The Edgemont Machine Company, Dayton, Ohio, maker of lathe chucks, is having plans prepared for an addition to its plant on National Avenue.

Gormann & Marshall, Dayton, Ohio, will rebuild their garage and repair shop at 179 East Second Street, recently destroyed by fire.

The Platt Iron Works Company, Dayton, Ohio, will make an addition to its foundry estimated to cost $6,000.

Heating equipment will be required for a public school building to be erected at Gratis, Ohio. Architect Albert Metsinger, Dayton, Ohio, drew the plans for the building.

The Dayton Gas Company, Dayton, Ohio, will soon issue bonds for $200,000 to be used for extending its system.

The Dayton Recording & Computing Machine Company, Dayton, Ohio, has taken out a permit for another addition to the plant of the Speedwell Motor Car Company in Edgemont suburb, which it recently acquired.

A. F. Gilbert, village clerk, Farmersville, Ohio, will open bids Sept. 1 for the following equipment for the village waterworks: One 25-hp. oil engine, one upright double-acting A. W. pump, one air compressor, displacing 19 cu. ft., two pneumatic compression tanks, 9 x 30 ft., and a miscellaneous list of fire hydrants, cast-iron pipe, etc.

The Ohio Metal Company, Columbus, Ohio, is making some additions to its plant on North Fourth Street. A reverberatory furnace is included in the equipment to be installed.

The Foster Gear Company, Columbus, Ohio, maker of automobile gears, will soon make a large addition to its plant on Kaiser Street.

The Dunlap Engineering Company, Columbus, Ohio, has been reorganized and will start work at an early date. It is understood that the company will manufacture lathes as well as other machine tools.

Architect W. T. Mills, Columbus, Ohio, has completed plans for the proposed six-story plant of the Marietta Paint & Color Company, Columbus.

The Fitzgerald-Auld Company, Columbus, Ohio, manufacturer of dental supplies, has increased its capital stock to $200,000 and will make an extension to its plant at an early date.

The Budd Dairy Company, Columbus, Ohio, will erect a plant on Fourth Street for which refrigerating equipment will be required.

The Ross Supply Company, Greenville, Ohio, expects to make an addition to its foundry at an early date.

The Wilmington Castings Company, Wilmington, Ohio, is now operating its new foundry. The new buildings are one story, of brck construction. P. S. Horton is general manager.

The Moulton Wireless Umbrella Company, Plain City, Ohio, will remove its plant to Wilmington, Ohio, and will greatly increase its output.

The Vulcan Last Company, Ironton, Ohio, contemplates making an addition to its factory. Building details are not yet available.

The Fairfield Paper Company, Basil, Ohio, is making an addition to its box factory.

The Central South

LOUISVILLE, KY., Aug. 23, 1915.

Business in the cotton belt has been inclined to pick up, but if placing cotton on the contraband list by the Allies ties up the market and depresses prices, business in all lines will have to go through another period like that which followed the beginning of the war last year. Outside of this important factor, general conditions are favorable. Manufacturing projects are more numerous, and the requirements of public service plants are also noticeably increased.

W. A. Thomson & Co., Third and Main Streets, Louisville, plans the erection of a grain elevator at Seventh Street and the Southern Railway. It will cost $70,000 and will be electrically equipped. It will be operated as the Southern Elevator Company of which W. A. Thomson is to be president. Building and machinery contracts will be let in the immediate future.

The Fidelity & Columbia Trust Company, Louisville, has purchased the plant of the Hercules Motor Car Company, New Albany, Ind., for $20,800. The purchase was made on behalf of the first mortgage bondholders, who foreclosed their claims. Disposition of the equipment has not been finally determined.

Samuel D. Jones, business director of the Louisville board of education, will receive proposals Aug. 27 for a new boiler at the Lucia Avenue school.

The United States Engineer, Louisville, will receive proposals until Sept. 16 for furnishing sheet steel piling for dam 43 on the Ohio River.

The American Ladder Company, Momence, Ill., is considering the establishment of an assembling plant in Louisville. The entire factory may be moved to this city.

The municipal electric light plant of Henderson, Ky., will be improved by the construction of a new boiler-house. Address Mayor Johnson.

Plans for the new municipal waterworks of Lancaster, Ky., call for two 150-hp. boilers, 120-kw. and 60-kw. generators, Corliss engines, electric pumps, etc. L. G. Davidson is mayor.

The Sunlight Laundry Company, 427 Madison Avenue, Covington, Ky., will purchase a 150-hp. boiler, 75-hp. engine and 50-kw. generator for its new plant. A. G. Simrall is president.

Work on the traction line of the Cumberland Traction Company, Elizabethtown, Ky., has been begun. The Greenup Electric Company, Elizabethtown, has contracted to furnish the power, and may require some addition to its present generating equipment.

The Cumberland & Manchester Railroad Company, Barbourville, Ky., which was recently organized, will establish shops at Barbourville. Equipment is to be bought at once.

John Settle and Hoyt Coil, Madisonville, Ky., are planning to equip an automobile garage and repair shop.

S. A. Cherry, Hopkinsville, Ky., is organizing a company to manufacture a new type of automobile wheel.

The Elizabethtown Milling Company, Elizabethtown, Ky., will purchase a 25-hp. and a 75-hp. motor. The motors will replace a gasoline engine.

The Paducah Clay Company, Paducah, Ky., has been organized with $4,000 capital stock and will develop a high-grade clay deposit in Marshall County, Ky. H. R. Lindsey is president.

Browne Cornelison, Oklahoma City, Okla., is planning to remove his knitting mill to Somerset, Ky. The plant is to be enlarged.

Stokes Payne, LaCenter, Ky., has let a contract for the construction of an automobile garage, equipment for which will be purchased shortly.

Henderson, Tenn., has voted to issue bonds for the construction of an electric light plant and water system. J. I. Galbraith is mayor.

The Johnson City Box Company, Johnson City, Tenn., is being organized with $150,000 capital by Chicago interests for the manufacture of tobacco boxes. Electric motors and wood-working machines will be bought.

The John G. Duncan Company, Knoxville, Tenn., is in the market for machinery for making clothes-pins, for saws and a 50-hp engine, second-hand.

The Weller-Foard Table Company, Morristown, Tenn., has been organized with $10,000 capital stock and will purchase wood-working machinery for installation in a factory building which has just been leased. J. N. Fisher is president.

R. E. Qualls, Adams, Tenn., will purchase equipment for an automobile garage.

Altavista, Va., will build a water system, it is reported. Address the mayor.

Crewe, Va., is planning to issue bonds for the purpose of building an $80,000 waterworks plant. Plans have been completed by Anderson & Christie, Charlotte, N. C.

South Boston, Va., has issued bonds for the purpose of building a water plant. Anderson & Christie, Charlotte, N. C., have drawn plans for the improvement, which will cost $100,000.

The Newport News Fish & Ice Corporation, Newport News, Va., will establish a sea produce cold storage plant, for which equipment costing $100,000 will be purchased. J. J. Lane is to be vice-president and general manager.

The main building of the West Pascagoula Creosoting Works, Gautier, Miss., was destroyed by fire last week with a loss of $30,000. The plant will be replaced at once.

Birmingham

BIRMINGHAM, ALA., Aug. 23, 1915.

While the machinery trade has not been quite as active the past week as during the two preceding ones, general conditions are sound and still point to continued improvement. Second-hand machine tools are eagerly sought on account of difficulty in securing new ones. Repair shops are rushed. All sorts of mining apparatus, both coal and ore, are in excellent demand. Business is normal and there is nothing to complain of.

James Mitchell, president Alabama Power Company, Birmingham, and allied interests, have organized the Southern Munitions Corporation with a capital stock of $50,000 in the State of New York. The purpose is to aid shops in this district in securing war munitions orders.

The Free Lumber Company, Birmingham, has purchased 1700 acres of timber lands along the Alabama Great Southern Railroad in Tuscaloosa County, Ala., and will build large saw and planing mills.

The Mobile Sash, Door & Blind Company, capital stock $10,000, has been incorporated by G. J. Bates, E. G. Hill, C. F. Bates, and others, to manufacture building materials.

The city of Fairhope, Ala., is considering the establishment of an electric lighting plant.

The Payne Station Lumber Company, Kushla, Ala., capital stock $10,000, has been incorporated by H. C. Taylor, Mobile; William Morris, Chunchula, and others, to conduct sawmills and a naval stores business.

The Alabama Mattress Company, Gadsden, capital stock $10,000, has been incorporated with J. Nadler as president and J. Gold as secretary and will establish a mattress factory.

The Tennessee Coal, Iron & Railroad Company, Birmingham, has purchased 3000 acres of limestone lands near Birmingham and will open new quarries.

Henry O. Garrett, Dadeville, proposes the establishment of a factory for the manufacture of wagon hubs from white oak.

S. H. Bolinger & Co., Shreveport, La., is moving mills from that place to Silas, Ala.

G. W. Barrington, Quitman, Ga., has purchased a timber tract for $40,000 and will rebuild the burned J. R. Thompson mill.

Phenix City, Ala., is to build a waterworks system.

J. R. Forbes is establishing a broom factory at Douglas, Ga.

The Barney Sea Island Cotton Gin Company, capital stock $5,000, with privilege to increase to $10,000, has been incorporated at Barney, Ga., by G. L. Harris, Covington Graham, and others.

Greene, Hart & Greene, will establish a 35-bale ginnery at Tallapoosa, Ga.

J. J. Warren will establish a plant at Miami, Fla., at a cost of $60,000 for reducing pineapples to pulp.

The Okeechobee Ice Company, Okeechobee, Fla., capital stock $25,000, has been incorporated by C. L. Day, W. B. Crawford, and others.

The Victor Flour Mills, Greenville, S. C., has been incorporated by T. Frank Hunt and H. L. Todd, with a capital stock of $100,000.

The Lake Region Brick Company, Eagle Lake, Fla., capital stock $25,000, has been incorporated by S. D. Creel, W. M. Hampton, and others.

The Daytona Electric Light & Power Company, Daytona, Fla., Michael Scholtz, president and general manager, will develop 400 hp.

St. Louis

ST. LOUIS, MO., Aug. 23, 1915.

The demand for machine tools in this territory has improved to such an extent that it is now proving difficult to make deliveries within the time desired by the purchasers, while the aggregate of business is beginning to approach normal. The inquiry is as yet confined to single tool and other small requirements, but the total is reaching quite satisfactory proportions. Further increase in the demand, however, will, so the dealers say, bring them up sharply against the conditions developed by the purchases made of machine tools in other territories which have exhausted supplies and made deliveries a thing of the distant future. Business conditions generally continue to show improvement, with money easy and rates low. There is also appearing a better disposition toward investment in industrial enterprises.

The Mogul Motor Truck Company, St. Louis, Mo., is erecting a large assembling plant, and addition to its present works, and will require considerable equipment for which it is in the market.

The Reliable Auto Livery Company, St. Louis, Mo., has acquired a site for a large new garage and repair plant.

The Commercial Auto Body Company, St. Louis, Mo., has acquired a new location into which it will move its plant, adding considerable equipment for which it is in the market.

The Becktold Printing Company, St. Louis, Mo., has leased new quarters and will install considerable new machinery when it removes upon the completion of alterations.

The F. G. Hanley Cypress Company, St. Louis, Mo., has been incorporated with a capital stock of $12,500 by Sidney H. and George W. Rodway and J. L. Hanley, and will install mill equipment.

The Fulton Iron Works Company, St. Louis, Mo., has plans for the building and equipment of machine shops and foundry in addition to the present plant. The building will be 100 x 150 ft.

The St. Louis Railway & Dock Company, St. Louis, Mo., has contracted with the city authorities to equip a large grain elevator and mechanical terminal facilities on the municipal docks which the city authorities have decided to build. W. J. Holbrook is president.

The Joplin Concentrating Company, Joplin, Mo., has been incorporated with a capital stock of $23,000 by T. B. Jenkins, J. S. Allington and F. A. Wilbur, and will equip a plant to concentrate custom ores.

The Hannibal Wire Fabric Company, Hannibal, Mo., has been incorporated with a capital stock of $270,000 by Bert Wiley, E. E. Heindel and Fred Kansteiner and will manufacture wire fabrics, screens, etc.

The Universal Construction Company, Kansas City, Mo., has been incorporated with a capital stock of $15,000 by Mark F. Rhodes, A. M. Carpenter and William F. Safford and is reported in the market for concrete mixing and other general construction equipment.

The Lasswell Lumber Company, J. P. Lasswell president, Kennett, Mo., will rebuild its lumber plant recently reported burned and will also install planing mill machinery for which it is in the market.

The Florine M. mine at Prosperity, Mo., controlled by P. G. Brumbaugh, W. L. Witter, E. A. Loughran, and others of Milan, Mo., will be improved with additional equipment including a compressor, six additional drilling machines and other machinery, doubling the capacity.

The St. Joseph Mining Company, Joplin, Mo., has been incorporated with a capital stock of $70,000 by George A. Barnett, Joplin, Mo.; J. W. Ground and Harold G. Dick, Kansas City, Mo., and is in the market for considerable power and mining equipment.

The Caruthersville Cotton Oil Company, Caruthersville, Mo., will equip a grain elevator and is in the market for about $12,000 of machinery.

The Velie Motor Company, Kansas City, Mo., has been incorporated with a capital stock of $25,000 by H. C. Ringo, H. H. Hutchinson and E. D. Davenport and will install repair equipment, including lathes, drill presses, etc.

The city of Plattsburg, Mo., has ordered plans drawn for a sewage system including a disposal plant to cost about $21,000. E. B. Murray, Kansas City, Mo., is engineer. A waterworks and filter plant to cost $28,000 will also be built.

The city of Macon, Mo., has voted to enlarge its waterworks plant and install a filtration system at a cost of about $30,000. Harper & Stiles, Kansas City, Mo., are engineers.

The Holmes Garage Company, Danville, Ill., has been incorporated with a capital stock of $21,000 by W. C.

olmes, Dan W. ockwith and B. N. Custer, and will equip repair plant and machine shop in connection with the arage.

George A. Booser, Corning, Ark., will change the equipment of an electric plant controlled by him from direct alternating and also add considerable electrical machinery for a public service plant.

The J. F. Weidmann Milling Company, Little Rock, Ark., will equip a mill for manufacturing feeds of various kinds, grinding alfalfa, etc. An elevator of 100,000 bu. capacity and equipment therefor will also be installed.

Dennison & Rogers Bros., Memphis, Tenn., have been awarded the contract for 350,000 cu. yd. of levee work at McGehee, Ark., and are reported in the market for additional equipment.

The Rapid Transit Company of Illinois, Murphysboro, Ill., has been incorporated with a preliminary capital stock of $100,000 by Joseph and Conrad Vonnahme, Daniel P. Roberts and M. Harned of East St. Louis, Ill., and Louis F. Hoeltmann, Collinsville, Ill., to build an interurban line to run from East St. Louis to Mt. Carmel, Ill.

A contract for $35,000 of levee work at Pine Bluff, Ark., has been awarded to Halleck & Thom of Little Rock, Ark., who are reported in the market for excavating and grading equipment.

The Arkansas Fertilizer Company, Argenta, Ark., of which Hayley M. Bennett is president, will equip at once a plant for the manufacture of sulphuric acid.

The city of Fordyce, Ark., will expend about $20,000 on a disposal plant in connection with a sewer system to be installed.

The Arkansas Light & Power Company, Arkadelphia, Ark., will install a 600,000-gal. filter at its plant which supplies water for several adjoining towns.

The city of Argenta, Ark., will acquire the plant of the Arkansaw Water Company and will enlarge its capacity. About $500,000 is involved. James P. Faucette, mayor, should be addressed.

The mechanical capacity of the cooperage plant of George A. Booser, Corning, Ark., is to be increased by the installation of new machinery.

The Tulsa Boiler & Mfg. Company, Tulsa, Okla., is in the market for electric cranes, several 7½ to 15-hp. motors, plate bending rolls, power equipment and other machinery.

An electric light and power plant will be equipped at Marshall, Okla., at a cost of $25,000 under a bond issue authorized. The mayor should be addressed.

W. E. Gupton and others will equip an electric light and power plant at Wirt, Okla., and machinery is wanted therefor.

The Consolidated Lead & Zinc Company, Tulsa, Okla., has been incorporated with a capital stock of $100,000 by J. C. Letcher, J. P. Given and F. W. Given and is in the market for considerable mining machinery and power equipment.

A. V. Wills & Sons, Paragould, Ark., have been awarded a contract for 300,000 cu. yd. of drainage work at New Albany, Miss., and are reported in the market for equipment to do the work.

The Corinth Oil & Refining Company, Corinth, Miss., has been incorporated with a capital stock of $50,000 by A. W. Chambliss, A. S. Halliday and K. Cowles.

The Chinn Auto Company, Biloxi, Miss., has been incorporated with a capital stock of $15,000 by Thomas G. Chinn and others and will install repair and machine shop equipment in connection with a garage.

Morgan's Louisiana & Texas Railroad & Steamship Company, Algiers, Sta. A., New Orleans, La., will erect and equip a large machine and erecting shop and will receive bids on the equipment in September.

The dock board at New Orleans, La., has plans by Ford, Bacon & Davis, New Orleans, for four shipping and one drying elevator of 25,000 bu. hourly capacity and will receive bids for the necessary equipment.

The National Co-operative Produce & Cold Storage Company, New Orleans, La., of which F. F. Philibert, Sr., is secretary and manager, will equip large cold storage and ice plants in different parts of the city, as well as a central cold storage and ice-making plant to supply a chain of fish, game and produce stores which have been acquired from the National Fish, Game & Produce Company.

The city of Lake Charles, La., has granted a franchise to J. C. Fressler and G. C. Boyle, who will equip a gas manufacturing plant.

The Louisiana Railway & Navigation Company, New Orleans, La., of which William Edenborn is president, will equip a pipe line and oil pumping station and also erect a refinery.

The city of New Orleans, La., has ordered the preparation of plans for a municipal electric plant with Fred W. Ballard of Cleveland, Ohio, as engineer. W. J. Hardee is city engineer.

Texas

AUSTIN, TEX., Aug. 21, 1915.

The tropical storm that swept the coast early this week did no great damage to industrial plants. The machinery and tool trade is beginning to take on the usual fall activity. The season's demand for cotton ginning machinery is about over. The sales of this class of machinery were not as large this year as last, due largely to the decrease in the cotton acreage.

E. N. Sanctuary of Galveston, and associates, will build an automobile assembling plant at Temple.

The Dublin Electric & Gas Company, Dublin, will extend the street lighting system.

H. B. Conlisk, Temple, will build a garage and repair shop at a cost of about $7,500.

The attorney general has approved an issue of $140,000 bonds for the construction of a drainage system in Harris County. The commissioners' court, Houston, has charge of the proposed work.

The People's Gin Company, Vernon, will build a cotton gin. Baylis B. Harriss is interested.

The F. A. Ames Company of Texas, Dallas, has been organized for the purpose of manufacturing vehicles of various kinds. G. O. Evans is one of the incorporators.

The waterworks plant of Mart will be improved and extended. Bonds in the sum of $21,000 have been voted for the purpose.

The City Council of El Paso will take steps soon to sink eight or ten wells to augment the municipal water supply. The second unit of the new pumping station, which will increase the available water supply 2,000,000 gal. daily, is under construction.

The local water, light and ice plant has been purchased by W. B. Tuttle of San Antonio and associates from J. A. Bachman of Austin and J. E. Jones of Lockhart. The plant will be improved and enlarged. Frank E. Scovill is the new manager.

The City Council of Dexter, N. M., plans to build a municipal electric light and power plant.

The voters of Corpus Christi have granted J. H. Caswell of San Diego, Cal., and associates, a 30-year franchise for a street railroad system.

The Caps Gin Company, Caps, will build a cotton gin. C. R. Lindsey is interested.

The Live Oak County Gin Company, George West, will build a cotton gin. George W. West of San Antonio is interested.

J. A. Morgan of Quanha plans to build a milo maize feed mill at Amarillo. It will have a daily capacity of 100 tons of maize.

The Mimbres Valley Co-operative Creamery Company will build a creamery at Deming, N. M.

Swift & Co. of Chicago will rebuild their refrigerating plant at El Paso, which was recently destroyed by fire, entailing a loss of about $50,000.

The Shoup Hardware Mill, Marshall, will install additional machinery and enlarge its plant for the manufacture of table tops, table legs, auto rims, felloes, axles, singletrees and other wood products.

San Francisco

SAN FRANCISCO, CAL., Aug. 17, 1915.

Machine-tool business is limited almost entirely to sales of an insignificant nature. A good many larger inquiries are appearing, but buyers so far refuse to close when the prices and deliveries now obtainable are mentioned. Users of tools in this vicinity have been accustomed to getting prompt delivery out of stock, and find it hard to accommodate themselves to the six to eight months' delay now necessary. With a few important exceptions, local shops and foundries are still running on a small scale; but there is considerable evidence of a more confident feeling, and a definite revival is expected in the fall. General business is getting into better shape, and export and import trade at this port is passing all records. In miscellaneous machinery there is a good deal of figuring, but actual sales are small. Small pumping units find a little more demand, and a number of waterworks projects are coming out. Large irrigation de-

velopments have been proceeding slowly, but there are signs of an early revival in this line; and somewhat more progress is being made in electrical development. Some substantial inquiries for highway machinery are in sight. Copper and gold mining interests continue in the market on a fairly liberal scale, and efforts are being made to develop many minerals, such as chrome ore, manganese, magnesite, etc., which could be handled profitably under war conditions.

The Folsom Iron Works, 3157 Eighteenth Street, suffered considerable damage from fire Aug. 7.

It is announced that the old powder plant of the Du Pont Powder Company near Stege, Cal., which has been idle for some time, will be fitted up for operation.

The San Joaquin Light & Power Corporation is preparing to install a new hydroelectric plant at Merced Falls, Cal., at a cost of about $65,000.

It is announced that the Hume-Bennett Lumber Company, Sanger, Cal., will extend its logging railroad several miles this fall.

The Fitzgerald-Noble Company, Richmond, Cal., recently organized to manufacture various patented articles, is figuring on the installation of a machine shop and vulcanizing plant.

According to a report from Pasadena, Cal., a lot of new machinery will be installed in a branch to be opened there by the Ford Motor Company, at 87-89 North Marengo Avenue.

The United States Flexible Metallic Tubing Company, Los Angeles, has leased the entire ground floor of a large building at Boyd and Omar streets, and is purchasing equipment for the manufacture of patented fittings for steam pipes. A. B. Marshall is president.

The Buttonlath Mfg. Company is building a plant at Vernon, Cal., for the manufacture of wall-board.

The Pacific Northwest

SEATTLE, WASH., Aug. 17, 1915.

The value of Alaskan exports shipped via Seattle in the first seven months of the present year is practically twice that for the same period in 1914, showing the enormous development work proceeding in Alaska. The exports for this period are officially given at $14,671,679. Mining men are firmly convinced that the copper output of Alaska will reach a value of $24,000,000 for 1915, and by 1917 its gold production will be increased to considerably more than $80,000,000, as compared with $5,496,925 for the first seven months of this year. The European conflict has opened up another channel of trade for the Pacific Coast, particularly the Northwest—an opportunity to bid on supplies needed by the Chilean lumber trade. Several Seattle shipbuilding plants are preparing to bid on four wooden sailing vessels for F. Razzeto, Santiago, Chile, to be of 1000 tons each, and used for the lumber trade. Farmers report grain yields exceeding even the most sanguine expectations. Inquiries for mining and irrigation machinery continue to appear, and several good orders have materialized the past week. Seattle dealers are almost invariably given first opportunity to figure on Alaska machinery requirements, and some big orders for mining machinery are now pending.

W. J. Felt and J. Paulsen, representatives of the Milling Mfg. Company, Spokane, Wash., are conferring with the farmers in the vicinity of Ephrata, Wash., with the view of establishing a flouring mill in that section.

The Inland Empire Paper Company, Spokane, Wash., has completed plans for building its sulphide plant. A mortgage of $350,000 has been filed to cover a loan of that amount made by the company, and construction work will start immediately.

The Friend Mill & Improvement Company, Friend, Ore., has received a permit from the State for the use of waters of Jordan Creek, to irrigate 1000 acres of land in that vicinity and will build a ditch and pipe line eight miles in length, to cost approximately $10,000.

The concentrator, compressor plant, machine shops and heating plant of the Idaho Continental Mining Company, Porthill, Idaho, recently completely destroyed by fire, will be rebuilt. It is understood the company also plans the erection of a hydroelectric plant on Boundary Creek, to furnish power for mine and concentrator.

The plant of the Veness Lumber Company, Winlock, Wash., which was practically destroyed in a recent fire, will be replaced by a small mill with a capacity of about 50,000 ft., to be enlarged when conditions justify.

The city of Council, Idaho, will hold an election in the near future to vote an $18,000 bond issue, to be used in installing a municipal water system.

The Peacott Mfg. Company, Seattle, Wash., has been incorporated by O. U. Peacott and E. A. Webster, with a capital stock of $50,000.

The Vincent Water Company, Vincent, Ore., of which A. T. Smith, J. P. Caldwell, D. J. Kirk, and others, are incorporators, will construct a water system, to cost about $18,000.

The Roundup Coal Mining Company, Roundup, Mont., owner of the light and power plant of that city, will install a new 200-kw. 2300-volt lighting generator, and two additional boilers.

The Prairie City Light & Power Company, Canyon City, Ore., will shortly begin work on the new light plant, to develop 800 hp.

R. Thomas, Portland, Ore., has selected a site for the paper mill which he intends building in the vicinity of Albany, Ore. He is inventor of a new process for making paper.

It is announced by W. H. Gore, president Medford National Bank, Medford, Ore., that the Western Sugar Company, Salt Lake City, will begin work at once on the beet sugar factory to be erected in Medford at a cost of $600,000.

A. W. Deming, superintendent Pacific-American Fisheries, Bellingham, has taken over the controlling interest of the Bellingham Broom & Woodenware Company, and is now president. The plant will be improved and new machinery installed.

The Three Forks Milling Company, Three Forks, Mont., will construct a four-story frame mill building with 200 bbl. capacity. The stock of the company is $55,000.

The Loxauto Mfg. Company, Seattle, has filed articles of incorporation, with stock of $50,000, and R. W. Dearmorn, William Birrell, H. I. Dearmorn, E. M. Cox and C. B. Dean, are incorporators. It will build a small plant for the manufacture of vehicles and motor boat supplies.

Sawyer Bros., Spokane, Wash., have received a contract for the construction of water and sewer systems in Harrington, Wash., including water tank, pumping plant, bacterial disposal system, etc.

The plant of the Rex Consolidated Mining Company, near Spokane, Wash., was damaged to the extent of $20,000 in a recent fire. The power and compressor plants, timber framing sheds and boiler house were completely destroyed. M. J. Sweeny, general manager of the company, announces that steps will be taken immediately to rebuild.

Canada

TORONTO, Aug. 23, 1915.

The Hydro Electric Power Commission, Welland, Ont., is contemplating making extensions to its plant at Welland, to cost $8,000. A new transformer will be installed.

The Devilbiss Atomizer Company, Windsor, Ont., will erect a factory at Glengarry Avenue and Sandwich Street. Construction work will be started at once.

J. W. Pugsley, secretary of the department of railways and canals, will receive bids until Sept. 1 for operating machinery, electrical equipment, etc., for the Trent Canal. Plans may be secured from the department at Ottawa, or from the superintending engineer, Trent Canal, Peterborough, Ont.

The Ottawa board of control is contemplating the establishment of a factory for the manufacture of shells for the Government. Mayor Porter, Ottawa, is interested in the undertaking.

James W. Tygard of the Tygard Rotary Engine Company gave a successful demonstration of his new rotary engine at the Polson Iron Works, Toronto. He stated that a factory would be established in Canada, backed by Canadian capital, to manufacture the engine.

The Toronto Hydro Electric Board, Toronto, is contemplating the expenditure of $1,375,000 for new equipment.

Machinery will be purchased at once by the Doty Engine Company, Brock Street, Goderich, Ont., for the manufacture of shells.

Beatty Bros., York Street, London, Ont., will build an addition to its factory to cost $3,000.

The Town Council, Liverpool, N. S., will spend $10,000 on repairs and additions to its electric light plant. T. R. Bartling is clerk.

Fire destroyed the saw mill at Cacke Bay, Ont., owned by the George Gordon Company. The loss will amount to $125,000, with $83,000 insurance.

J. A. Brillant, Anique, Que., is receiving prices, catalogs and other information about wood-working machinery, etc.

Smart Brothers, Collingwood, Ont., will make extensive additions to their plant.

The factory of Hardware Specialties, Inc., Pembroke, Ont., has been destroyed by fire with a loss of $40,000.

Large additions will be made to the plant of the Thames Quarry Company, St. Mary's, Ont. A new crusher building, 40 x 60 ft., will be built and new machinery installed.

The Bawden Machine Company, 163 Sterling Road, Toronto, will build a new addition to its factory. S. M. Bawden is manager.

L. H. Martin, Bury, Que., whose sawmill was recently destroyed by fire with a loss of $8,000, will rebuild and will be in the market for new machinery.

The Albert F. Reed Company, Bishop's Falls, Newfoundland, plans the erection of a factory for the manufacture of wood pulp, lumber, timber, etc.

P. H. Renaud, Agnes Street, Lake Magantic, Que., is preparing plans for the erection of a pulp mill. New machinery, including 5 Baker cut off saws, a 70-hp. engine, etc., will be required.

The W. H. Malkin Company, Ltd., 56 Water Street, Vancouver, B. C., will build a factory. Machinery for the manufacture of food products, etc., will be required.

The Falls Barron Company, Amherstburg, Ont., will build a cold storage plant to cost $10,000.

The Imperial Oil Company, Esquimalt, B. C., will call for tenders shortly for the erection of oil refineries, etc., to cost $175,000. A. M. Abbey is manager.

The Haddington Quarries & Construction Company, Ltd., Vancouver, B. C., has been incorporated with a capital stock of $300,000, to carry on the business of shipbuilding, iron founding and machinery manufacture, etc.

The B. K. Shingle Company, Ltd., Vancouver, B. C., has been incorporated with a capital stock of $10,000 to manufacture shingles, etc.

R. D. Hall, Petrolia, Ont., will build a factory for the manufacture of gates and woodenware of all kinds.

C. H. Johnson & Sons, Ltd., 8 Dagenais Street, Montreal, will build an addition to its factory to cost $3,000. The company manufactures wire guards for machinery and other wire goods.

The Quebec Munitions Company, Ltd., Montreal, has been incorporated with a capital stock of $50,000 to manufacture all kinds of war munitions, high explosives, guns, swords, iron, etc. Among the directors of the company are Edward Murray, Charles N. Monsarrat and Valentine I. Smart.

The Musical Strings & Specialties, Ltd., Montreal, has been incorporated with a capital stock of $20,000 by Louis Le David, Edward C. Baker, and others, to manufacture musical instruments.

The Luckett Loose Leaf, Ltd., Toronto, has been incorporated with a capital stock of $40,000 by James S. Luckett, 65 Howard Avenue; Alexander Mills, room 804-809 Traders Bank Building; James Findlay, and others, to manufacture loose leaf devices.

The McCaskey Systems, Ltd., Toronto, has been incorporated with a capital stock of $500,000 by Harry B. McDonell, 90 Ontario Street; James J. Maclennan, 44 King Street West; John N. Black, and others, to manufacture all kinds of registers.

The Merit Shoe Shops, Ltd., Montreal, has been incorporated with a capital stock of $50,000 by Thomas G. Morris, Daniel Smith, and others, to manufacture foot wear.

The Ottawa Valley Radiol Company, Ltd., Ottawa, has been incorporated with a capital stock of $50,000 by O. B. Seneuve, Allan J. Fraser, William J. McCarthy, and others, to manufacture high explosives.

The J. R. Eaton & Sons, Ltd., Orillia, Ont., has been incorporated with a capital stock of $200,000 by James R. Eaton, Edwin R. Eaton, and others, to manufacture lumber, sash, wood, builders' supplies, etc.

The J. W. & C. Ward, Ltd., has been incorporated with a capital stock of $40,000 to manufacture textile fabrics. The company has appointed Joseph H. Thomas and Harding Thomas, 38 Wellington Street East, Toronto, to be its attorneys.

The Auto Products Company, Ltd., Ottawa, has been incorporated with a capital stock of $250,000 by Reynolds Bray, William J. Halpin, Patrick J. Daly, and others, Montreal, to manufacture automobiles and aeroplanes.

The Standard Canning, Ltd., Ste. Philomene, in the County of Chateauguay, Que., has been incorporated with a capital stock of $50,000 by Joseph E. A. Decelles, Joseph Decarie, both of Three Rivers, Que.; Joseph Parent, and others, of Ste. Philomene, Que., to manufacture canned goods, packing cases, etc.

The Aylmer Shoe Company, Ltd., Aylmer, Ont., has been incorporated with a capital stock of $75,000 by Edward A. Miller, Frank L. Wagner, George Sears, and others, to manufacture leather goods.

The Peninsular Pulp & Paper Company, Ltd., Thorold, Ont., has been incorporated with a capital stock of $200,000 by William E. Shafer, Edwin R. Larter, and others, of Niagara Falls, N. Y., to manufacture pulp, lumber and paper.

The chairman of the Toronto Electric Commission, 15 Wilton Avenue, Toronto, is in the market for an overhead traveling crane.

Work will be started at once on the construction of a power house building at Quebec for the Canadian Pacific Railway Company. The Downing Cook Company, Montreal, is the general contractor.

The address of the Canadian Metal Cap & Steel Company, Ltd., recently incorporated, is care of Leslie H. Boyd, Yorkshire Insurance Building, 136 St. James Street, Montreal.

Sutton Bros., Kent Street, Delhi, Ont., will build a plant for the manufacture of bottles to cost $15,000.

T. L. Church, chairman of the board of control Toronto, will receive bids until Aug. 31 for the erection of an electric crane hoist and single line clam shell buckets at the Main Sewage Disposal Works, Toronto.

The Wortman & Ward Company, London, Ont., will build an addition to its factory to cost $20,000. The company manufactures iron force and lift pumps, hay and grain loaders, etc.

T. Z. Smith, Matsqui, B. C., will build a factory for the manufacture of boxes.

A new sewage pumping station will be built at Thorold, Ont. Chipman & Power, Mail Building, King and Bay streets, Toronto, are the engineers.

The Quaker Oats Company, Ltd., Chicago, Ill., has been granted a license to carry on business in Alberta. The company will erect a plant in Alberta in the near future.

The Electric Meter & Stamping Metal Company's plant at New Hamburg, Ont., was destroyed by fire with a loss of over $30,000. The company manufactures stamps, dies, etc. John Messner is manager.

The ratepayers of Galt, Ont., have passed a by-law to grant $40,000 to the waterworks commission. Extensions to cost $20,000 will be made.

The report that the Dominion Steel Metal Company, Lister Building, Hamilton, Ont., will start the construction of a factory, is incorrect. The Dominion Sheet Metal Company, Ltd., Hamilton, was probably referred to. This company has just completed the erection of a plant, 100 x 240 ft., for the manufacture of galvanized sheets, in the East End industrial district of the city. Production will start about Sept. 1. A. T. Enlow is president.

Government Purchases

WASHINGTON, D. C., Aug. 23, 1915.

The lighthouse inspector, Portland, Ore., will receive bids until time not specified for furnishing oil engines and compressors for the Slip Point Light Station, Wash.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, Aug. 17, for supplies for the navy yards, as follows:

Schedule 8559, Steam Engineering

Class 1, Mare Island—One engine lathe. Bid 55, $873; 68, $897.90; 86, $900; 111, $1,452, informal.

Class 2, Mare Island—One double emery grinder—Bid 15, $95 and $145; 27, $159; 31, $165; 40, $190; 68, $164; 86, $159; 111, $195; 135, $235.

Class 3, Mare Island—One bench drill—Bid 86, $190.

Schedule 8560, Steam Engineering

Class 4, Puget Sound—One Universal saw bench—Bid 2, $533.25; 52, $560.38; 77, $529, $393, $546.50 and $410.50; 102, $365; 106, $500, $530, $565, $577.10 and $595.

The names of the bidders and the numbers under which they are designated in the above list are as follows:

Bid 2, American Woodworking Machinery Company; 15, Baird Machine Company; 27, Cincinnati Electrical Tool Company; 31, Irwin W. Cheyney; 40, Jas. Clark, Jr., Electric Company; 52, J. A. Fay & Egan Company; 55, E. L. Fraser; 68, Harron, Rickard & McCone; 77, Kemp Machinery Company; 86, Manning, Maxwell & Moore, Inc.; 102, D. Nast Machinery Company; 106, Oliver Machinery Company; 111, Pacific Tool & Supply Company; 135, Valley City Machine Company.

NEW TRADE PUBLICATIONS

Metals.—Ellsworth Haring, 1114 Liberty Street, New York City. Pamphlet. Describes a line of resistance metals that are made in wire and strip form from a nickel chrome alloy containing no iron, as well as non-corrosive high resistance alloy of high fusing point, a nickel-steel alloy and a non-corrodable nickel-copper alloy. Tables giving the properties of the various metals are included. Mention is also made of nickel wire, ribbon, sheets and rods, spark plug wire, ignition metal, nickel alloys and welding, binding, music and piano wire.

Electric Controlling Apparatus.—Cutler-Hammer Mfg. Company, Milwaukee, Wis. Catalog. Size, 4 x 6½ in. Concerned with a line of electric controlling apparatus of various types. The catalog is of the loose-leaf variety and is divided into sections, one for each class of apparatus such as motor starters, speed regulators, drum type and elevator controllers, self-starters, etc. These sections have tabbed index pages and directly following the latter in each case is an index to the literature contained in that particular section with the various bulletin numbers. For the most part, the bulletins are a single sheet and contain an illustration of the apparatus, together with a table of the sizes that can be supplied, a brief statement of the work it is designed to perform and a table of dimensions.

Piston Rings.—Wasson Piston Ring Company, 1123 Clinton Avenue, Hoboken, N. J. Pamphlet. Gives a brief discussion of the advantages to be derived from the use of properly designed and fitted piston rings and the various factors to be considered in their design. The text is supplemented by a number of line drawings to illustrate the points made. A brief description of the Wasson piston ring which differs from the conventional type in that it is rough machined to approximately the finished size and is then ground and treated to stretch the inner surface of the ring to give the equivalent of an inserted taper spring, is presented, the special advantage of this ring being that there is no space provided for the accumulation of oil.

Pneumatic Tool Lubricators.—Chicago Pneumatic Tool Company, Fisher Building, Chicago, Ill. Bulletin No. 130. Relates to a line of automatic oilers for all classes of pneumatic hammers; rock, piston and rotary drills and a grease machine for the company's Little Giant Drills. Illustrations of the devices are presented with a sectional drawing of the automatic oiler. Mention is also made of the advantages to be derived from the systematic lubrication of these tools together with a brief description of the oils and greases that have been specially prepared for this purpose.

Direct-Current Generators.—Allis-Chalmers Mfg. Company, Milwaukee, Wis. Bulletin No. 1093 superseding No. 1082. Deals with a line of direct-current generators intended for driving from steam engines. The construction of the generators is gone into at some length, the text being supplemented by a number of engravings of the generators and their various parts. Views of installations are included and mention is made of the use that can be made of some of this apparatus as electric motors.

Portable Tools.—Stow Mfg. Company, Binghamton, N. Y. Bulletin No. 400. Deals with a line of portable tools that includes drilling machines of various types, tool post and bench grinding, screw driving, flexble boring and suspended type drilling and grinding machines. All of these are illustrated and a brief statement of the work that they will do and the sizes in which they can be supplied is included.

Steam Traps.—American Steam Gauge & Valve Mfg. Company, Camden Street, Boston, Mass. Booklet entitled "Steam Trap Catechism." Contains information on points of interest to steam trap users. This is arranged in question and answer form and the various types of traps, the way they operate, the causes of failure, water-hammer and wire-drawing and information as to how to decide on the size of trap required for a given service are touched upon. An illustration of the steam trap together with a dimension diagram and table is presented and a partial list of users is included.

Portable Hydraulic Press.—Vulcan Iron Works, 327 North Irving Avenue, Chicago, Ill. Circular No. 44. Relates to a portable hydraulic press for machine and railroad car shops, which is mounted on wheels for moving around the plant wherever work is to be done. Emphasis is placed upon another special feature of the press, which is the use of a chain that enables the press to be slung up and used on work that could not be taken and brought to the press without incurring considerable expense. Illustrations, a brief description and a condensed table of specifications are g and a numbered list of repair parts and directions for ating the press are included.

Self-Opening Die Head.—Eastern Machine Screw poration, New Haven, Conn. Pamphlet. Describes an matic self-opening die head which has been designed for on screw machines to overcome the trouble sometimes with in the operation of both solid and opening die he The construction of the die head is gone into at some le and special emphasis is laid upon the ease with which die can be adjusted to suit the size of the work and locked in place. A number of views of the die heads gether with a numbered list of repair parts are included.

Upright Drilling and Tapping Machines.—J. Snyder & Son, Worcester, Mass. Catalog. Illustrates describes a line of upright drilling and tapping mach made in sizes ranging from 20 to 46 in. For the most pa pair of facing pages is given to each tool, an engra being presented on one, while a brief description and densed table of specifications is given on the other. foundation plan with table of dimensions is included mention is made of a line of steel sockets and sleeves can be supplied for use with the machine.

Centrifugal Pumps.—Lea-Courtenay Company, New N. J. Catalog H-2. After describing the various ge types of centrifugal pumps and the manner in which parts entering into the pump are inspected and the comp unit tested, the details of pump design and construction gone into at some length. Following this brief ge description the various classes of pumps, such as sin stage, single-suction multi-stage, double-suction multi-s balanced, opposed single-suction, vertical multi-stage underwriters' fire pumps are described and dimen speed and power tables given. The text description of t several classes is supplemented by a number of illustra of the pumps and their parts, several installation v being included.

Sand Blast Machinery.—Mott Sand-Blast Mfg. C pany, Inc., 1157 East 138th Street, New York City. pamphlets. Present illustrations and brief descriptions direct pressure sand-blast machine, two types of sand-b tumbling barrels and a line of sand-blast accessories. economy of cleaning castings by the sand-blast tum barrel is gone into at some length. In the acce pamphlet, nozzles, hose connections and nozzle hol hoods and respirators are illustrated and briefly describ

Simplex Jacks.—Templeton, Kenly & Co., Ltd., South Central Avenue, Chicago, Ill. Bulletin catalog No. Covers a line of jacks ranging from 1-ton automobile up to a 40-ton unit for railroad and heavy industrial w One of the especially interesting jacks is an emerg type which is a combination of a crane and a jack pivots on its own base throughout a range of 60 deg. lifts, lowers, pushes or pulls at any angle. A separate is given to each type of jack with an illustration, brief of specifications including capacity, lift, height, weight, and a short description of the work that it is designe and the features that make it applicable thereto.

Metal Sheets.—Newport Rolling Mill Company, New Ky. Catalog H. Concerned with a line of metal s for use as building material. Emphasis is placed upo fact that the product is controlled from the raw mater the finished sheet by the operation of the company's steel plant and rolling mills, galvanizing works and ro factories. The different products are illustrated with descriptions of the sizes and grades in which they ca supplied. A number of tables showing the amount of that can be covered by various sizes of sheets in g Mention is made of other sheet metal products, suc fancy roofing and siding, shingles, portable garages, tilators, conductor pipe, etc. Bundling tables of va sizes of black sheets are included together with a tele code and a comprehensive index.

Tool Grinding Machine.—Gisholt Machine Com Madison, Wis. Catalog K-3. Treats of a universal grinding machine for sharpening lathe: shaping, planing slotting machine and boring mill tools of both the ins cutter and solid forged type. The advantages of h one or more tool grinding machines installed throughou plant and the work in each department done by one p instead of by the different workmen are briefly touched Instructions for grinding various kinds of tools on this chine are presented, the text being supplemented by num engravings of the several operations. Reproductions of c furnished with the machines showing the correct setti the universal head for grinding different tools are includ well as a number of engravings showing the styles of ground. A general description of the machine is pres supplemented by both line and halftone engravings and tion is made of some of the company's other products as boring and turning mills, automatic turret lathes, et